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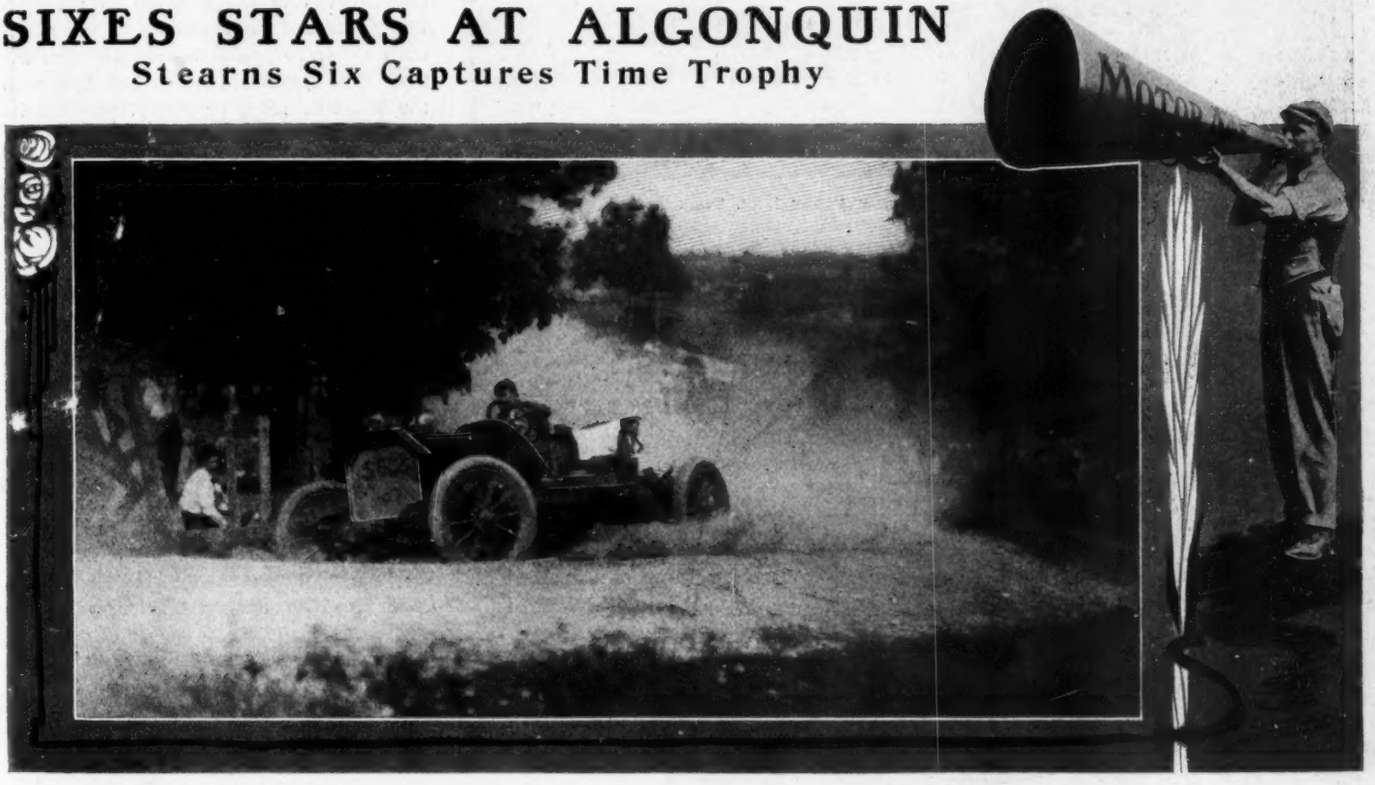
MOTOR AGE

SIXES STARS AT ALGONQUIN

Stearns Six Captures Time Trophy



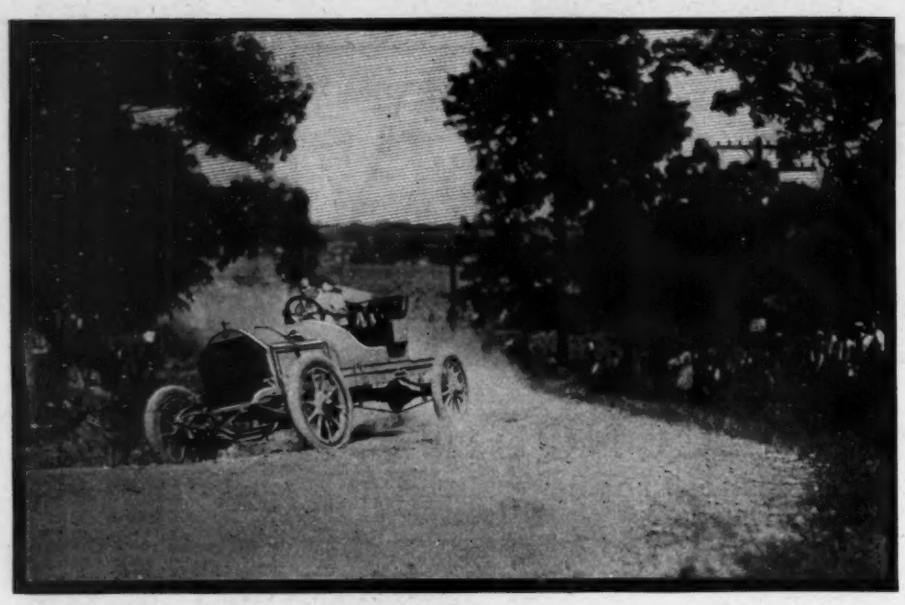
Leland in Stearns Six Taking the First Turn on Perry Hill, Scene of Standing Start Climb

CHICAGO, Aug. 15—Throwing caution to the winds, opening his throttle to its widest, taking all sorts of chances and risking his life on hooking the left rear wheel of his Stearns six-cylinder stripped chassis in a narrow rut near the top of Phillips hill and which swung around a most dangerous turn, Frank W. Leland yesterday climbed the famous slope, an even ½ mile, in :29⅘, thereby beating his old rival, George Salzman, of Thomas Flyer fame, and winning the first leg on the Algonquin cup, which was hung up as the time prize in the third annual hill-climb of the Chicago Motor Club, postponed from last May because of the rainy spell.

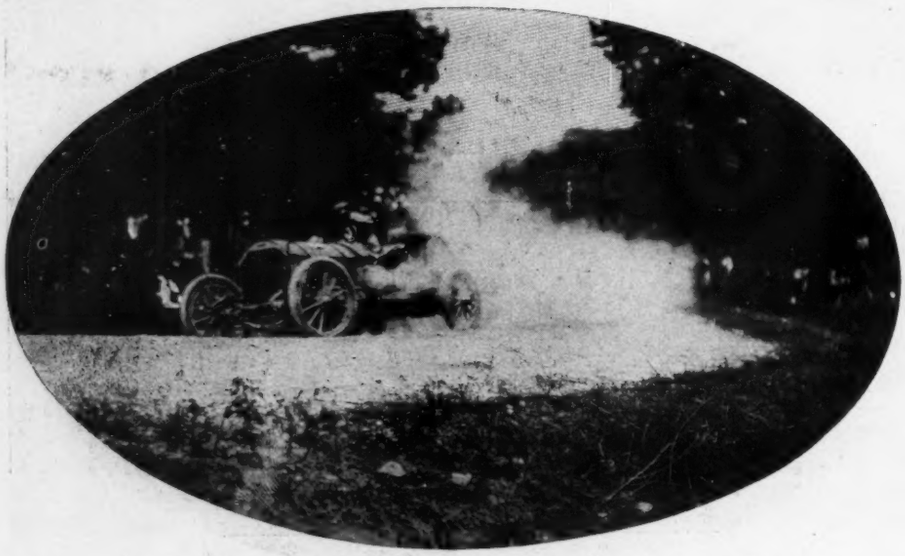
Leland had to hit that narrow rut in order to win. It was a desperate chance, for the turn was a bad one. One man already had failed to hold it and had dashed into the crowd, injuring three spectators, and more than one star driver had shut off power before swinging around the corner. But Leland found himself in a position where he had to break a record in order to win. Salzman, a few minutes before, had gone up in :30, exactly 60 miles an hour, and the Algonquin cup seemed as good as won. Leland never had equalled that mark even in practice and it seemed a forlorn hope, for his rival had tied him in the morning on Perry hill and that :30 looked as fast as a streak of lightning. But Leland was game. He knew there was a little rut swinging around that bend that would hold the Stearns six in check if he only could hook it with his left rear wheel. With the rut holding the rear of the car, Leland knew he could hold the front and whiz around the bend with all power on. He struck it and the big car clocked :29⅘. This, with :24⅘ in the morning, gave Leland a total of :54, which beat Salzman by ⅘ of a second and gave him the first leg on the Algonquin cup, hung up by the villagers as a challenge trophy and which has to be won three times by one car.

ALGONQUIN CLIMB RESULTS

Class A, handicap	
Winner of class	Holsman
Best total time	Bendix
Class B, handicap	
Winner of class	Brush
Best total time	Chalmers-Detroit
Class C, handicap	
Winner of class	Apperson
Best total time	Corbin
Class D, handicap	
Winner of class	Cleveland
Best total time	Thomas-Detroit
Class E, handicap	
Winner of class	Pierce-Arrow
Best total time	Apperson
Class F, free-for-all	
Winner of class	Stearns Six
Class H, free-for-all	
Winner of class	Knox
Class J, amateur handicap	
Winner of class	Thomas-Detroit
Class I, amateur free-for-all	
Winner of class	Thomas-Detroit
Records Established	
Perry Hill	
Knox, No. 50	:24 1-5
Apperson, No. 36	:24 1-5
Phillips Hill	
Stearns, No. 43	:29 2-5



THOMAS-DETROIT BLUEBIRD HOLDS THE PERRY HILL TURN WELL



APPERSON BIG DICK, EDGAR APPERSON AT THE WHEEL, ON PERRY HILL

BUICK RUNABOUT WHICH CLIMBED THE TWO HILLS IN 78-2-5 SECONDS

It was a battle of the sixes, a glorious struggle, too, in which two of the best drivers in the country renewed an old fight and in which one of them turned the tables on his antagonist. It was a renewal of that famous race at Savannah last spring in which Salzman, driving a Thomas Flyer, had defeated Leland in a Stearns six in the race for that class of machines. Salzman piloted the car which he drove to victory in the south, while Leland was in one of the same type which he had at Savannah. It was the first time since that contest that the two had hooked up and it was a battle for blood. The rivals had broken even in the morning at :24⅘ on Perry hill and so it was up to the afternoon event to decide honors between the two. The Apperson, which had tied with the Knox at :24⅕ on Perry, had had its trial and had done :31 on Phillips, and with the little Knox was still a big factor, their time in the afternoon making both Salzman and Leland shudder a bit. Leland wasn't ready when his turn came and so Salzman shot the hill before his rival. He had done :30 in practice and in his class, which was run a short time before the free-for-all, which decided the Algonquin cup, he had clipped the record to :30⅘. Knowing what his car could do, Salzman made his trial with all the confidence in the world. He didn't have any private rut and he had to take desperate chances on the turn. He struck the bumps on the bend, the big Thomas jumped around like a kernel of corn on a hot stove but Salzman weathered this motoring Cape Horn in daring fashion, whizzing across the tape like a shot and with all the ear marks of a record-breaker and a cup winner. He had touched :30 and the trophy seemed his.

Last in his class, Leland then went after the cup. Away to a beautiful start, he scrambled up the hill as if it was level ground. The turn loomed up ahead of him but he never shut off. He was playing for that rut and he hooked it. As the car steadied down, Leland's face lost the look of desperation and a grin of joy illumined his features as he came around the bend as smoothly as if he had been going only 25 miles an hour instead of 60. Indeed, so well did he navigate this danger point that he did not seem to be moving at the speed of Salzman. But the watches told the story—Trego's automatic timing device had clocked :29⅘ and by the scant margin of ⅘ second Leland had avenged Savannah and had come out of the ruck the hero of the day, holder of the Algonquin cup and winner of the big free-for-all. It was a glorious windup of a thrilling day.

Subordinated by this cup struggle but none the less interesting because of this, the other events on the big card brought about close and thrilling contests. Five of the classes were run under a handicap formula which brought out motor efficiency, the results being reached by mul-

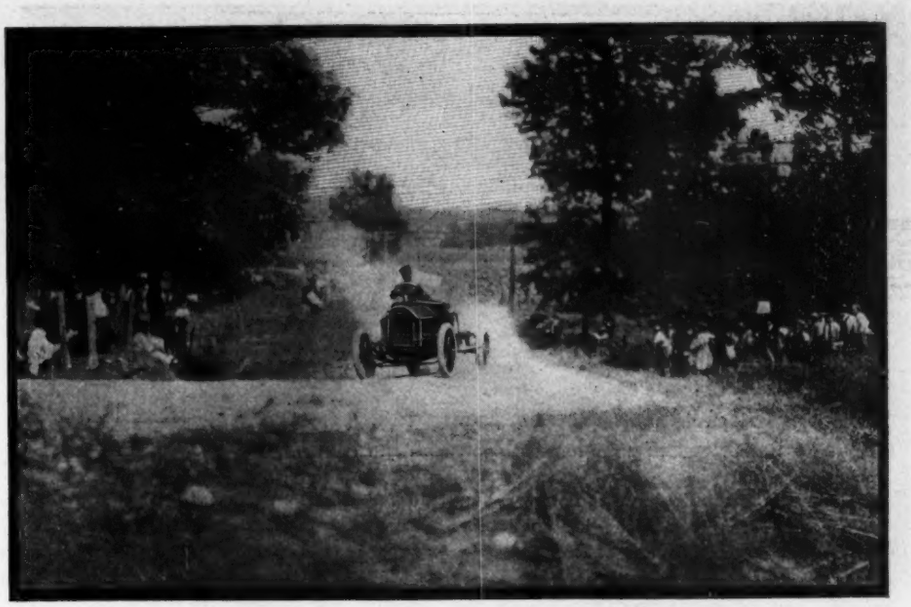
tiplying the piston area by the time and dividing by the weight of the car with driver. Then there were two free-for-alls, one for cars over 90 inches piston displacement and the other for those under. In these only time figured.

Two amateur events were carded but these were shot to pieces by scratches which left Arthur W. Grenier as the only candidate for the honors. He got both the handicap and the open through walkovers, but the fact he had no opposition did not prevent him from trying his best in his Thomas-Detroit. And at that he made corking good time, getting :26⅘ in the handicap on Perry hill and doing :25 in the free-for-all on the same slope. He was not permitted to try Phillips hill in the afternoon because of the danger of running into the crowd. His two events were last on the card and by that time the spectators had swarmed onto the course, so Chairman Root of the contest committee refused to let him go up, giving him the cups without finishing the work on the hills.

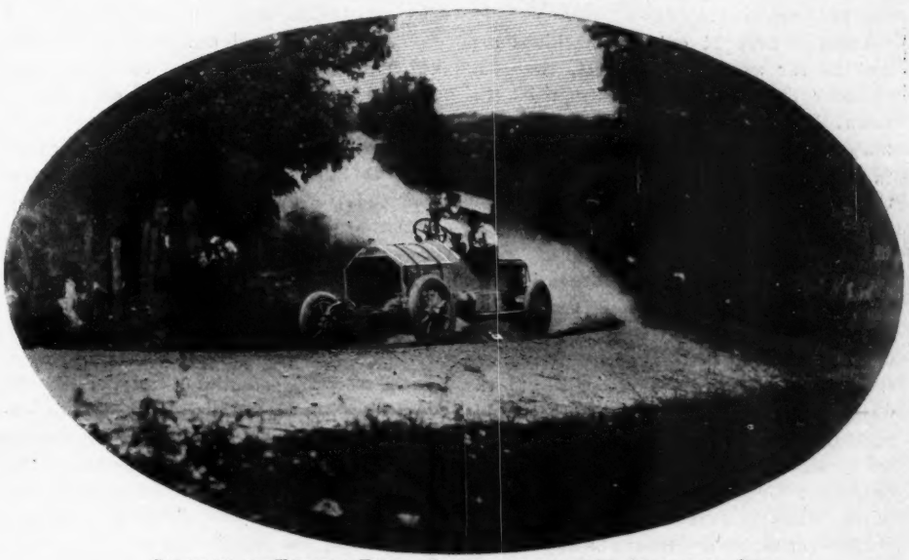
Under the formula the Holsman was returned a winner in class A, the Brush in class B, the Appérson in class C, the Cleveland in class D, and the Pierce-Arrow in class E. The class F free-for-all went to the Stearns and class H free-for-all to the smaller of the two Knoxes.

The motor club played in luck so far as the weather was concerned. For several days before there was rain and immediately following it started up again. But Friday was the one bright spot in the week. It was a glorious morning, not too hot for comfort and with the skies absolutely cloudless. The two hills were in fine shape, not so good perhaps as last May, but still fast enough to make it absolutely certain that records would be broken. Thursday was a good day for the trials and in these more than half a dozen cars had shown that their speed was limited only to the ability of the drivers to take the turns. Therefore, it was a joyous crowd that retired late Thursday night, everyone satisfied with the weather conditions, the hills and the world in general.

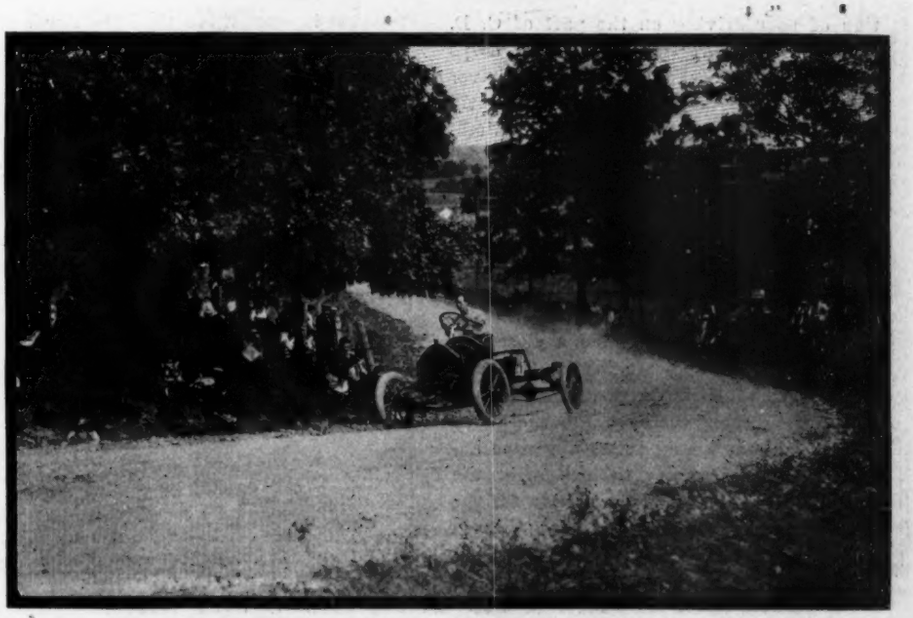
The sunrise gun did not bring out many for practice as it had done in previous years. Evidently the drivers had learned the hills and were willing to wait for the official climbs. Consequently there was not much doing in the early hours. The weighing-in started at 8 o'clock and then the cars lined up as usual at the bottom of Perry hill, the standing start incline with its awkward turn near the bottom and another near the top, a slope that will test the hill-climbing ability of any car because of the necessity of starting from a standstill. It was 10 o'clock before the first event was started and at that time the top of Perry hill was black with people and cars. It was the greatest turnout that ever witnessed the climb. There must have been at least 5,000 people and 300



PIERCE-ARROW, WINNER OF CLASS E; TIME ON TWO HILLS, :61 2-5

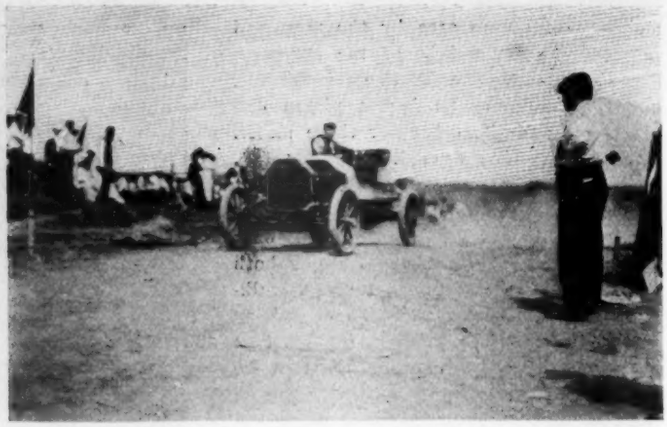


SALZMAN, IN THOMAS FLYER, RUNNER-UP FOR THE ALGONQUIN CUP



NEW CHALMERS-DETROIT WHICH MADE THE TWO HILLS IN 75 1-5 SECONDS

SPEEDY CORBIN THAT PERFORMED WELL IN CLASS C



CLEVELAND, WINNER OF CLASS D, AT TOP OF PERRY HILL

cars on the ground when the motor buggies started to work. The high wheelers showed a great improvement over last year and on Perry hill every one of the six contending machines went up inside the minute, the Holsman running one, two under the formula and the Bendix making the best time.

Class B brought out six machines also and so far as the time went, the four-cylinder Buick runabout surprised the talent by skinning up the 1,000 feet in :32⅖, beating the new Chalmers-Detroit ⅘ second. The Corbin had the speed of the party on Perry hill in class C, the model O Apperson, however, leading in percentage.

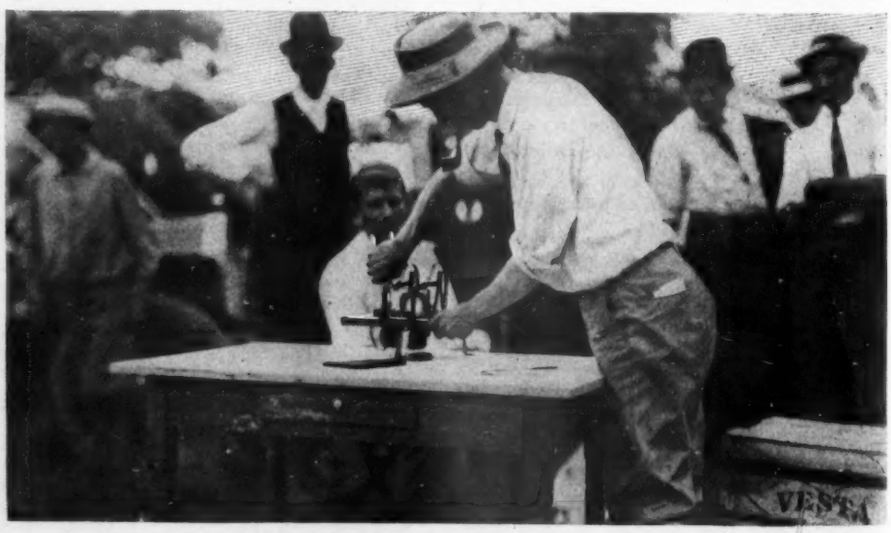
The Cleveland led in percentage in class D at the end of the morning session, the time honors going to the Thomas-Detroit, while in class E, the last of the handicaps, the Pierce-Arrow had a pull at the weights, with the Apperson Jackrabbit making best time, :24⅕. This Apperson mark was a new record and was not beaten, although tied by the little Knox in the class H free-for-all. In the class F free-for-all the Stearns and Thomas Flyer broke even in the morning at :24⅗.

The session was marked by an exhibition of poor driving on the part of C. D. Paxson that nearly put the timing corps out of business. Paxson was the driver of the Jackson in class D and evidently had not had much experience in hill-climbing. As he took the last turn in his trial he swung from the right hand side of the road to the left, cutting in to the gutter and between the stakes of the timing machine and the timers' tent. He carried away the stakes, broke a megaphone, and went so close to Ed Campion that he tore the latter's trousers. It was a close call for the timers who were in the tent and unconscious of their danger.

Following the morning climb there was an intermission during which everyone improved the opportunity to look after the inner man. Then all squared away for the afternoon sport, with four motor cycle events as a curtain-raiser. The two-wheelers consumed much valuable time and so it was not until 3:30 that the motor cars had their inning. The motor cycle events proved interesting though, and great speed was shown by the little machines, a couple of them being inside the motor car record until the Stearns and the Thomas Flyer got busy. The 20-10 class resulted in a tie between Fred Huyck on an Indian and Thomas Champay on a Torpedo, who each did :40⅘. C. W. Van Sickle on an Indian, won the 30-50 class in :33, while Harvey Bernard on a Harley Davidson clipped :31⅕ in winning the 61 class. In the contest for road machines Arthur Lyon on an Excelsior went up in :42⅗. During these trials Van Sickle came close to death. Riding the 7-horsepower twin-cylinder Indian, he was going up at 65 miles an hour when he skidded on the turn, being thrown, but luckily escaping injury.

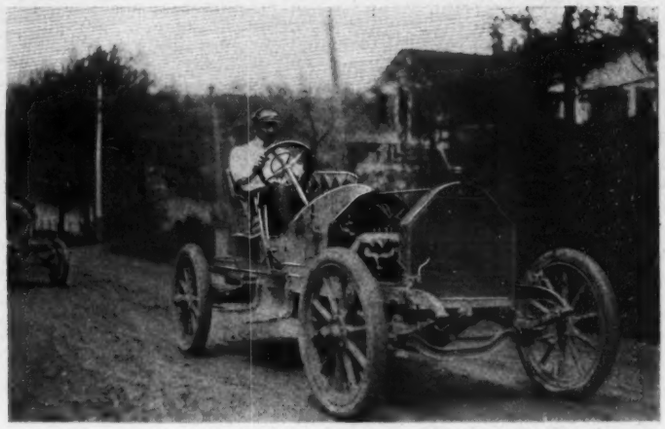
The motor buggies got on the hill after them and the results did not alter the morning standing, the Bendix again making the best time and the two Holsmans getting the places under the formula. The Brush held its own in class B and the Chalmers-Detroit came into the limelight by beating the Buick 4⅕ seconds, giving it the best total time on the two hills for the class. The Corbin again proved speediest in class C but the little Apperson ran consistently and landed first place. The Cleveland, too, stayed in front in class D in which the Thomas-Detroit, driven by Burns, made the best time, with the Buick coming in between Burns and the other Thomas-Detroit, driven by Lorimer. The Pierce-Arrow landed class E, in which the Thomas Flyer turned the tables on the Apperson with :30⅘. The Stearns broke the tie with the Thomas Flyer in class F when Leland established his record, while in class H the speedy Knox stayed at the top, although Lorimer in the Thomas-Detroit gave him a warm argument, both getting under the record.

Paxson again came into undue prominence through his poor driving. Some said his car was too fast for him and it may have been true, for the Jackson certainly was going great guns as it hit the bad curve. Paxson swung the corner wide and ran to the extreme right hand side of the road, his wheels striking the grass plot there. He gave a desperate whirl to the steering wheel and the car responded and shot to the other side of the road in a half-circle which put the machine into the ditch and mowed down a row of spectators. Immediately all was confusion and it was feared a dozen people had been killed. But it was not as bad as that.



CHIEF TIMER TREGO ADJUSTING HIS INGENIOUS APPARATUS

MOTOR AGE MEGAPHONE AFTER IT WAS HIT BY THE JACKSON



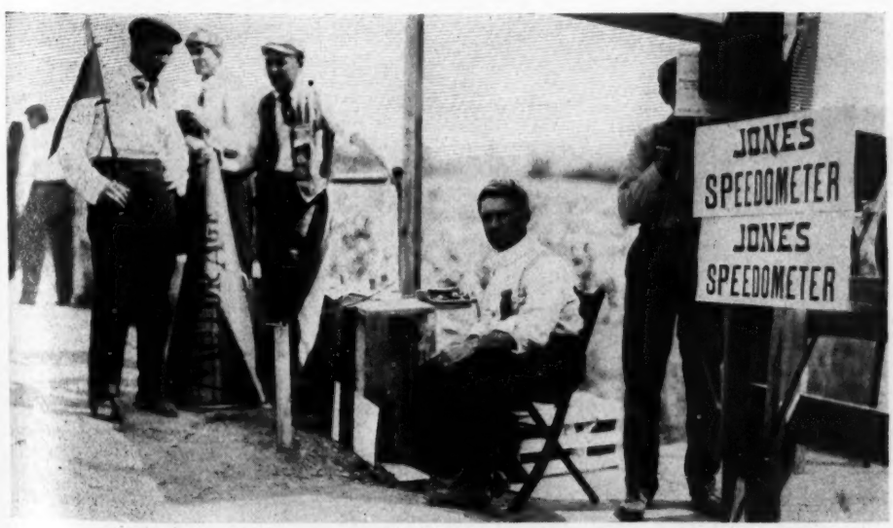
A. W. GREINER IN A THOMAS-DETROIT, WINNER OF AMATEUR EVENTS

Paxson himself escaped unhurt but three of the onlookers were injured, none of them seriously, though. The car had broken a wheel and damaged axle and frame.

Analyzing the performance of the forty-one different cars that competed in the time trials it is most interesting to note that in the majority of cases the drivers got every bit of speed out of the machines that they were capable of giving. The performance of different cars of the same maker and power which climbed the two hills at different times and with different drivers is phenomenal in that they made the two ascents in practically the same time. The three Thomas-Detroit machines came close together in this respect; No. 54 taking 58⅗ seconds, No. 29 58⅗ seconds and No. 32 59⅘ seconds. These are three interesting performances, different cars of the same make climbing two hills in the same time and another in but 1⅖ seconds more. The three trips two Stoddard-Dayton cars made up the hill were equally noticeable—No. 27 in :63⅕, No. 55 in :63⅕ and No. 47 in :63⅖—only ⅕ second between one performance and the other two, which were alike. The Diamond T car made an ascent in the formula events and also in the free-for-all and its totals differed by but ⅗ second, the times being 64⅗ and 65⅕ seconds. The Tincher car in its double performances made one in 62⅗ seconds and the other in 63 seconds.

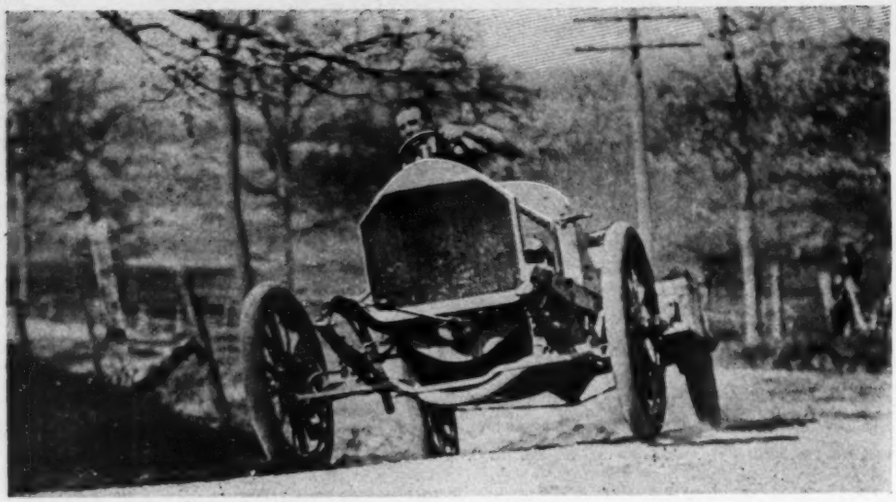
Surveying the work of the many cars on both hills it is very apparent that many of the cars that were properly geared for the morning hill with its standing start lost out on the long afternoon hill with its flying start. When the average is taken it is shown that it took the majority of the cars approximately one-third longer on the long hill than on the short one; and that where the difference is greater than this it was due to improper gearing for the hills. The highest-powered cars lost out on the morning hill in which the records were set by the little Knox and the small Apperson jackrabbit at 24⅕ seconds, beating the big Stearns and the Thomas Flyer that performed so wonderfully on the long hill. Then again both the Apperson and Knox lost out a little during the afternoon climb undoubtedly because their cars were too light to take the dangerous turn without shutting off or letting the clutch out, whereas the Stearns and Thomas had sufficient weight to make the turn without resorting to either tactics. The motor buggies all lost on the afternoon hill, their performance on the morning hill being by far the better.

The performance of the twenty-eight cars that contested under the club formula makes it an unmistakable fact that some of the recently-bought-out small cars are better balanced machines than not a few of the heavily-powered vehicles. Notable in this class was the work of the Apperson car whose performance shows up exceptionally well in the climb because it ran on both hills with its full touring equipment whereas the others performed as stripped chassis. The formula is intended for cars with touring bodies and touring equipment and the many that stripped off body, fenders, brakes, dash and everything else suffered a little. In spite of this the work of the small Buick, the Corbin and the Chalmers-Detroit which follow the Apperson is particularly pleasing in that these cars are setting the pace in their particular line. The work of the Brush which stood second to the Apperson is not classed here because it is a one-cylinder machine and is not in the competing field with the other cars enumerated. The Buick, Chalmers and Corbin are among the lightest cars in their class, a fact which proves favorably the claim often advanced that the formula is not in favor of the heavy machines but rather those cars that have a motor well balanced in power to the chassis and body weight as well as the passenger load the car is made to carry. The work of the Cleveland and Buick No. 24 was also meritorious.



TIMERS' STAND AT BOTTOM OF PERRY HILL, NADALL IN CHARGE

The formula events showed that many of the big cars are greatly overpowered, that in fact the motors have sufficient to carry the cars much faster than the cars are capable of going. From the work of not a few of the machines it was apparent that the motors were run at their extreme crankshaft speed throughout the entire length of both hills and that no matter if more stripping had been done the car would not have been able to make any faster time on both hills. This also provokes the suggestion that the cars would have made just as fast time on the hills if they had carried more weight, because the motors had sufficient combustion chamber space to have maintained the same crankshaft speed with more weight. This suggests the query as to what is the proper proportion between motor power and car



LITTLE KNOX WHICH MADE TWO HILLS IN 55 1-5 SECONDS

TIME HISTORY OF CLIMB

Forty-one entries were represented in the Algonquin climb by thirty-five cars, twelve of the nominations being scratched. Of the forty-one the best aggregate time for the two hills was made by Leland in the Stearns six, who averaged 46 miles an hour on the two grades. Of course his greatest speed was shown on Phillips hill, which is exactly ½ mile from tape to tape and on which a flying start was permitted. On this Leland showed better than 60 miles an hour. On Perry hill, just 1,000 feet long and on which the cars were given a standing start, the Stearns did not do 30 miles an hour, which gives an idea of the severity of the climb. Leland's hardiest opponent was Salzman in the Thomas Flyer, whom he beat ⅗ second.

No.		
43	Stearns	54
34	Thomas Flyer	54 3-5
50	Knox	55 1-5
36	Apperson	55 1-5
39	Thomas Flyer	56
48	Thomas-Detroit	57
42	Apperson	57 2-5
40	Knox	57 3-5
34	Thomas-Detroit	58 2-5
29	Thomas-Detroit	58 2-5
32	Thomas-Detroit	59 4-5
24	Buick	60 4-5
18	Corbin	61 1-5
35	Pierce	61 2-5
52	Tincher	62 3-5
38	Stearns	62 3-5
31	Tincher	63
27	Stoddard	63 1-5
53	Stoddard	63 1-5
47	Stoddard	63 2-5
21	Wayne	64 2-5
49	Diamond T	64 3-5
28	Diamond T	65 1-5
30	Cleveland	66
19	Apperson	70 1-5
11	Chalmers-Detroit	75 1-5
16	Maxwell	77 2-5
46	Buick	78 2-5
9	Buick	78 3-5
17	Moline	88 2-5
20	Grout	90 1-5
10	Jackson	98 3-5
12	Moline	99
1	Bendix	113
4	Holsman	127
5	Black	131 1-5
8	Jackson	137
2	Holsman	139
3	Kiblinger	144 3-5
6	Kiblinger	151 3-5
7	Brush	212 3-5

load, a fact which can only be determined by careful calculation and experiment.

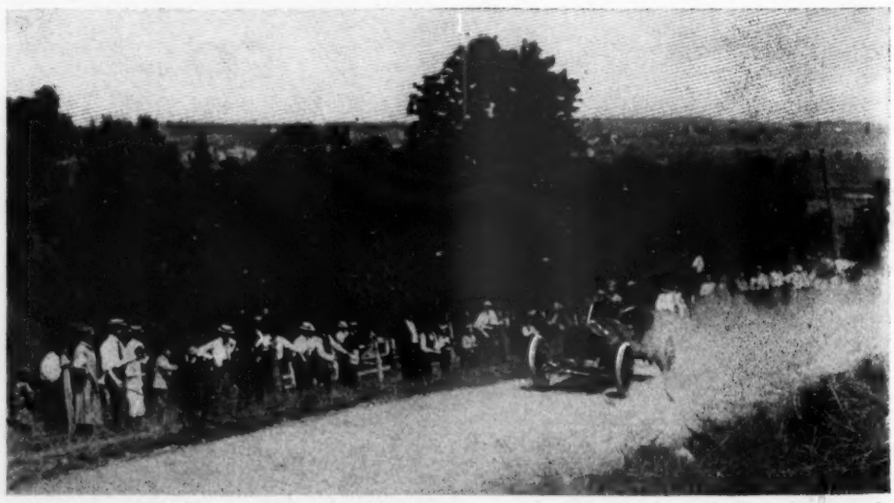
The amount of weight that the several cars carried per cubic inch of cylinder capacity may assist in arriving at conclusions along this line. The following table shows the cylinder capacity in one column, the car weight in the next and in the last column the number of pounds per cubic inch of cylinder capacity:

Car	Cyl. cap.	W't	Weight per cu. in. cyl. cap.
Apperson	300	3020	10
Brush	50.26	1240	24.6
Corbin	270.36	2035	7.5
Buick	165.4	1520	9.1
Chalmers	212.27	1855	8.7
Cleveland	392.7	3085	7.8
Buick	336	2340	6.9
Stoddard	354.4	2560	7.2
Maxwell	241.23	2045	8.4
Pierce	453.26	3170	6.9
Thomas-Detroit	373.06	2450	6.5
Thomas-Detroit	373.06	2365	6.3
Diamond T	392.7	2745	6.9
Wayne	333.9	2265	6.7
Jackson	216.47	2250	10.3
Tincher	470.4	2860	6
Grout	318.08	3005	9.4
Apperson	474	2555	5.3
Moline	212.27	1860	8.7
Jackson	157.08	1860	8.7
Moline	309.31	2380	7.6
Thomas Flyer	784.01	3595	4.5
MOTOR BUGGIES			
Holsman	100.53	1330	13.2
Holsman	100.53	1395	13.8
Bendix	201.16	2265	11.2
Kiblinger	100.23	1280	12.7
Kiblinger	100.23	1255	12.5
Black	168.34	1365	8.1

MOTOR EFFICIENCY STANDING

The model O Apperson, winner of class C, had the lowest percentage of the twenty-eight cars that participated in the handicap events, which gives the Kokomo concern additional honors—first place in the motor efficiency test, which is the fundamental principle upon which the handicap formula is based. Compared with last year when the 29-horsepower Columbia led in this division, this most recent addition to the Apperson family made a better showing according to the official figures than did the car from Hartford. The single-cylinder Brush, which was second in this rating, also performed in a sensational manner. The accompanying table on motor efficiency brings the alphabet into the limelight, the first three cars being the Apperson, Brush and Corbin—the A, B, C of the hill-climb. For that matter, the first seven cars in this table of efficiency are among the A, B, C's. The rating on percentage is as follows and shows just how each motor performed in the double climb of the Chicago Motor Club:

No.	Car	Percentage
19	Apperson	6.42
7	Brush	7.1
18	Corbin	7.19
9	Buick	7.28
11	Chalmers	7.52
30	Cleveland	7.73
24	Buick	7.83
29	Stoddard	7.92
4	Holsman	8.05
16	Maxwell	8.08
35	Pierce	8.09
32	Thomas-Detroit	8.21
29	Thomas-Detroit	8.27
2	Holsman	8.41
28	Diamond T	8.5
21	Wayne	8.52
1	Bendix	9.03
36	Apperson	9.16
3	Kiblinger	9.38
10	Jackson	9.48
31	Tincher	9.48
20	Grout	9.54
12	Moline	9.89
6	Kiblinger	10
8	Jackson	10.13
17	Moline	10.34
34	Thomas Flyer	11.37
5	Black	13.55



APPERSON JACKRABBIT, TOTAL TIME, 55 1-5 SECONDS, TYING THE KNOX

RESULTS OF CHICAGO MOTOR CLUB'S THIRD ANNUAL ALGONQUIN HILL-CLIMB

CLASS A—MOTOR BUGGIES, WHEELS 36 INCHES OR OVER, SOLID TIRES

No.	Car	H.P.	Bore	Stroke	Piston area	Weight	Driver	Entrant	A. M. time	A. M. per cent	P. M. Time	P. M. per cent	Total per cent
4	Holsman	12.8	4	4	100.53	1,330	J. M. Renegar	Holsman Automobile Co.	:48 1-5	3.03	1:19 3-5	5.02	8.05
2	Holsman	12.8	4	4	100.53	1,395	E. A. Fairbrother	Holsman Automobile Co.	:53 1-5	3.22	1:25 4-5	5.199	8.419
1	Bendix	25.6	4	4	201.16	2,265	O. M. De Launty	Bendix Co.	:42 4-5	3.404	1:10 4-5	5.63	9.034
3	Kiblinger	13.6	4⅛	3¾	100.23	1,280	J. H. Spanberg	W. H. McIntyre	:51 4-5	3.362	1:32 4-5	6.02	9.382
6	Kiblinger	13.6	4⅛	3¾	100.23	1,255	A. D. Himes	W. H. McIntyre	:55 1-5	3.64	1:36 2-5	6.36	10.00
5	Black	18.6	4¾	4¾	168.34	1,365	S. S. Scott	Black Mfg. Co.	:54 3-5	5.642	1:16 3-5	7.91	13.552
	CLASS B—TOURING CARS, ROADSTERS, TOURABOUTS OR STRIPPED CHASSIS, PISTON AREA UNDER 50 SQUARE INCHES												
7	Brush	6.4	4	4	50.26	1,240	B. Lobdell	Frank Briscoe	1:26	2.87	2:06 3-5	4.23	7.10
9	Buick	20	3¾	3¾	165.4	1,520	J. R. Burman	Buick Motor Co.	:32 2-5	3.039	:46 1-5	4.28	7.319
11	Chalmers-Detroit	24	3⅞	4½	212.27	1,855	L. B. Lorimer	Chalmers-Detroit Co.	:33 1-5	3.325	:42	4.20	7.525
10	Jackson	22	5¼	5	216.47	2,250	E. F. Schiefler	Jackson Auto. Co.	:39	3.75	:59 3-5	5.73	9.48
12	Moline	24	3⅞	4½	212.27	1,860	O. E. Thorne	Moline Automobile Co.	:37 3-5	3.757	1:01 2-5	6.136	9.893
8	Jackson	20	5	4	157.08	1,860	M. A. Holmes	Jackson Auto. Co.	1:03 2-5	4.688	1:13 3-5	5.443	10.131
	CLASS C—TOURING CARS, ROADSTERS, TOURABOUTS, OR STRIPPED CHASSIS, PISTON AREA OVER 50 AND UNDER 65 SQUARE INCHES												
19	Apperson	30.6	4⅝	5	300.6	3,020	Edgar Apperson	Apperson Bros.. Auto. Co.	:30 1-5	2.76	:40	3.66	6.42
18	Corbin	32.4	4½	4¼	270.36	2,035	W. G. Bird	Bird-Sykes Co.	:26 1-5	3.081	:35	4.11	7.191
16	Maxwell	28.9	4¼	4¼	241.23	2,045	C. W. Kelsey	Maxwell-Briscoe Co.	:32 3-5	3.405	:44 4-5	4.68	8.085
21	Wayne	32.4	4½	5¼	333.9	2,265	G. Schoeneck	H. P. Branstetter	:28 1-5	3.72	:36 2-5	4.80	8.52
20	Grout	32.4	4½	5	318.08	3,005	H. E. Halbert	H. E. Halbert	:38 2-5	4.064	:51 4-5	5.483	9.547
17	Moline	26.4	4 7-16	5	309.31	2,380	C. H. Van Dervoort	Moline Automobile Co.	:46	5.37	:42 2-5	4.96	10.33
	CLASS D—TOURING CARS, ROADSTERS, OR STRIPPED CHASSIS, PISTON AREA OVER 65 AND UNDER 90 SQUARE INCHES												
30	Cleveland	40	5	5	392.7	3,085	J. I. Miller	Cleveland Motor Car Co.	:27 2-5	3.21	:38 3-5	4.52	7.73
24	Buick	34.2	4⅝	5	336	2,340	J. R. Burman	Buick Motor Co.	:26 4-5	3.49	:34	4.37	7.86
27	Stoddard-Dayton	36.1	4¾	5	354.4	2,560	C. A. Englebeck	McDuffee Auto Co.	:26 4-5	3.36	:36 2-5	4.56	7.92
32	Thomas-Detroit	40	5	4¾	373.06	2,450	L. B. Lorimer	Thomas-Detroit Co.	:24 4-5	3.408	:35	4.810	8.218
29	Thomas-Detroit	40	5	4¾	373.06	2,365	W. R. Burns	Thomas-Detroit Co.	:25	3.58	:33 2-5	4.73	8.31
28	Diamond T.	40	5	5	392.7	2,745	C. A. Tilt	C. A. Tilt	:28 1-5	3.68	:37	4.82	8.50
31	Tincher	40	5	6	470.4	2,860	C. Rayfield	Tincher Motor Car Co.	:26 3-5	4.00	:36 2-5	5.48	9.48
26	Jackson	36.1	4¾	4¾	336.68	2,155	C. D. Paxson	Jackson Auto. Co.	:26 2-5	3.67		Upset	
	CLASS E—TOURING CARS, TOURABOUTS, OR STRIPPED CHASSIS, PISTON AREA OVER 90 SQUARE INCHES												
35	Pierce-Arrow	48.6	4½	4¾	453.26	3,170	P. Hofmann	H. Paulman & Co.	:27 1-5	3.59	:34 1-5	4.51	8.10
36	Apperson	48.4	5½	5	474	2,555	N. B. McLain	J. F. Gunther Co.	:24 1-5	4.06	:31	5.10	9:16
34	Thomas Flyer	72.6	5½	5½	784.01	3,595	G. Salzman	Walden W. Shaw Co.	:25 2-5	5.16	:30 3-5	6.21	11.37
	CLASS F—FREE-FOR-ALL, STRIPPED CHASSIS, AND RACING CARS, PISTON AREA 90 SQUARE INCHES OR OVER												Total time
43	Stearns	69.3	5⅜	5⅞	136.2	3,720	F. W. Leland	Western Motor Car Co.	:24 3-5	.....	:29 2-5	.....	:54
39	Thomas Flyer	72.6	5½	5½	784.01	3,595	G. Salzman	Walden W. Shaw Co.	:24 3-5	.....	:30	.....	:54 3-5
42	Apperson	62.5	6¼	5½	129.8	2,900	Edgar Apperson	J. F. Gunther Co.	:26 2-5	.....	:31	.....	:57 2-5
40	Knox	48.4	5½	5½	95	2,590	A. E. Denison	Knox Automobile Co.	:26 1-5	.....	:31 2-5	.....	:57 3-5
38	Stearns	46.2	5⅜	5⅞	90.8	3,060	F. W. Leland	Western Motor Car Co.	:26 3-5	.....	:36	.....	1:02 3-5
	CLASS H—FREE-FOR-ALL, ROADSTERS, STRIPPED CHASSIS OR RACING CARS, PISTON AREA UNDER 90 SQUARE INCHES												
50	Knox	38	4⅞	4¾	74.70	2,160	W. A. Bourque	Knox Automobile Co.	:24 1-5	.....	:31	.....	:55 1-5
48	Thomas-Detroit	40	5	4¾	78.52	2,450	L. B. Lorimer	Thomas-Detroit Co.	:25 1-5	.....	:31 4-5	.....	:57
54	Thomas-Detroit	40	5	4¾	78.52	2,365	W. R. Burns	Thomas-Detroit Co.	:25 2-5	.....	:33	.....	:58 2-5
52	Tincher	40	5	6	78.52	.....	C. Rayfield	Tincher Motor Car Co.	:27	.....	:35 3-5	.....	1:02 3-5
47	Stoddard-Dayton	36.1	4¾	5	70.88	2,560	A. C. Miller	McDuffee Auto. Co.	:28 1-5	.....	:35	.....	1:03 1-5
53	Stoddard-Dayton	36.1	4¾	5	70.88	2.495	C. A. Englebeck	McDuffee Auto. Co.	:28	.....	:35 2-5	.....	1:03 2-5
49	Diamond T.	40	5	5	78.52	2,745	C. A. Tilt	C. A. Tilt	:27 4-5	.....	:36 4-5	.....	1:04 3-5
46	Buick	22.5	3¾	3¾	44.36	1,520	J. R. Burman	Buick Motor Car Co.	:31 3-5	.....	:46 4-5	.....	1:18 2-5
51	Cleveland	40	5	5	78.52	3,085	J. I. Miller	Cleveland Motor Car Co.	:27 4-5	.....	.....	.....	.....
	CLASS J—AMATEUR HANDICAP												
57	Thomas-Detroit	40	5	4¾	78.52	2,405	A. W. Greiner	A. W. Greiner	:26 3-5		Awarded medal		
	CLASS I—AMATEUR, FREE FOR ALL												
59	Thomas-Detroit	40	5	4¾	78.52	2,405	A. W. Greiner	A. W. Greiner	:25		Awarded medal		

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DEMOUNTABLE RIMS—THE MOTORISTS' SALVATION

IN 5 YEARS, perhaps 3, many of the leading American manufacturers of motor cars will be fitting demountable rims as regular equipment and not making any extra charge because of them. At present makers of demountable rims fit them to cars at $100 per set and up, and some of them do not make much out of each set fitted at that price; but this condition will change: First one maker will adopt as standard a certain type of demountable, soon another maker will follow the lead, and as has been done with acetylene headlights, generators and gas tanks within the last couple of years, all will be compelled to either give such option or follow the route laid out by competitors.

A Mighty Conserver of Time

THE demountable rim is a mighty conserver of time, physical energy, patience, good nature and health, and as such deserves adoption. With any of the present half dozen styles of demountables it is possible when traveling along the road and a puncture or blow out occurs for two men with ease to stop the car, make a change of rims, replace the tools, strap the removed tire in place on the car and be off again in 3 minutes. To do this the two men have not to work extra fast—just a moderate pace, and in the task none of the work is physically hard, such as to cause excessive perspiration. Removing half a dozen nuts with a breast drill, jacking up a car and taking an inflated tire and rim from the side of the car are not to be compared to removing a heavy clincher tire or putting one on.

Human Economy Important

THE time saved in case of puncture or blowout with a demountable is one great consideration but the human economy is a much greater item. Two years ago a well known car driver in the middle west after beating off a heavy attack of sickness took a short drive on a cool spring day; a puncture occurred. In making the replacement with a standard clincher tire he got overheated. On resuming the trip he was chilled, new complications set in and he died in less than 10 days. This is but one of many similar cases that Motor Age is aware of having happened within the last 3 or 4 years.

Quick Detachable Is Good

IT IS true that the quick detachable rim and the air bottle have robbed the tire change of many of its horrors and that with them a new casing can be fitted in 6 or 7 minutes, but with these the work is much more severe than with the present demountable. The recent action of the A. L. A. M. in adopting a standard quick detachable is a most commendable act of approval and it will be interesting to await the time when this or other motoring organizations will adopt a certain make of demountable as standard for all cars built by the several members of its organization.

AS PROVEN by the grand prix race this season speed in changing, while a great consideration in a demountable rim is not the only one. Reliability and safety are great factors. Some cars in the grand prix made fourteen changes of rims, not because of punctures and blowouts, but because many of the rims rolled off during the race. This rolling off was an exceedingly dangerous feature and one which should be a primary consideration in demountable rim design. The rims rolled off for two reasons, either the nuts holding them on loosened, or the wedges between the permanent and demountable rims cocked with the tightening of the nuts and assisted in prying the demountable rims out of proper position.

Variety in Principles

IT IS not for Motor Age at this time to say which principle of attaching a demountable rim is correct and which is not, but it appears from recent tests and road races in which demountables figured that where nuts are used to secure a rim some means of locking these nuts should be used. At the Algonquin hill-climb a week ago one driver of a contesting car fitted with demountables had to tighten every nut holding his rims on before trying the hill. In the demountable rim contest conducted by the Chicago Motor Club a fortnight ago of the five competing cars in which nuts, without locking means, were used to hold the demountable rims in place, 60 per cent of the nuts loosened in a 75-mile test run at speeds of 15 to 40 miles per hour over good roads. Such a test is an easy one compared with the trials of a road race where cars travel as high as 100 miles an hour, where they average 60 miles an hour for successive hours, and where the rims are given a supreme test in taking corners and curves.

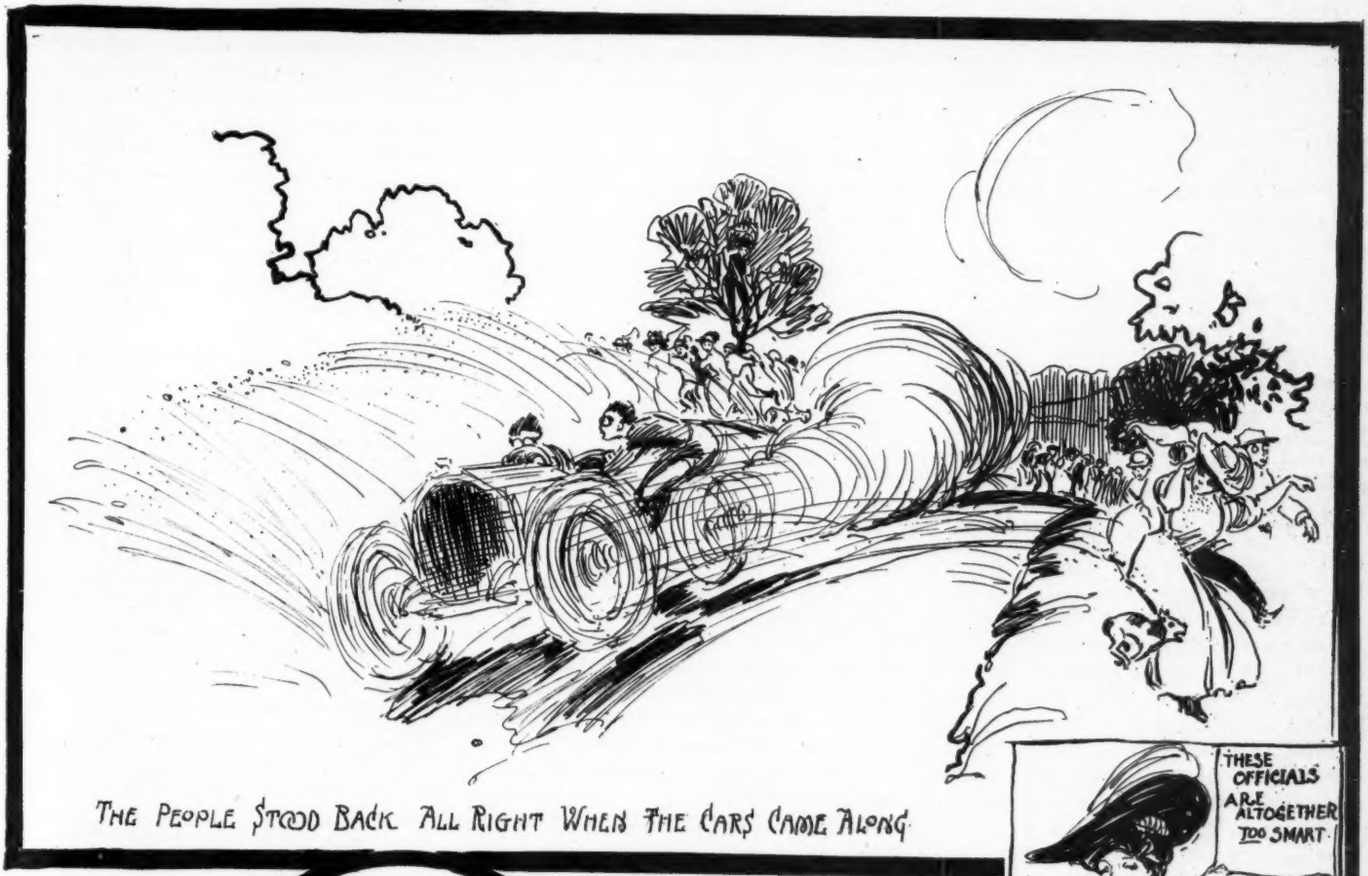
Combination System Wanted

A PRESENT argument against demountables is the length of time required to change a casing on a rim at the end of a day's run or during a day's run, when more punctures occurred than the number of extra rims carried. At present it is hard work making a change with a straight clincher because of the trouble securing the nuts to the short lug stems and the trouble of getting the beads out of and into the clincher lips with little leverage as compared with when a rim is on a wheel. This criticism is just. There is a solution and that is the using of a quick detachable flange on a demountable rim. There is no reason why this cannot be done, in fact, one of the newcomers in the demountable field has a rim sufficiently universal in its nature that any style of quick detachable or mechanically fastened tire may be used on it. This happy combination together with the air bottle constitutes a trio that should rob the demountable of most of the defects critics have declared it contains. The three will add materially to the joys of motoring in any land.

KNOX MAKING FAST TIME ON PHILLIPS HILL IN ALGONQUIN CLIMB

AT ALGONQUIN

THE WAY THEY LOOKED AS THEY CAME OVER THE TOP OF THE HILL



THE PEOPLE STOOD BACK ALL RIGHT WHEN THE CARS CAME ALONG

VAN SICKLE ON HIS INDIAN GOING AFTER THE RECORD

HOMECOMING OF VICTORIOUS THOMAS FLYER

NEW YORK, Aug. 11—Two days of well-sustained and enthusiastic greeting signalized the home-coming of the Thomas car, victor in the New York-Paris race, and its crew. On their arrival by the Lorraine on Saturday morning at the French line pier close to two score of enthusiasts of prominence in the motor world were gathered to greet them. They included representatives of the national body, the trade associations, and the local club. Harry S. Houpt and John E. Bowles, of the Harry S. Houpt Co., the entrant of the car; E. R. Thomas, of Buffalo, its maker; F. V. Faurote, of the Thomas factory staff, and Montague Roberts, who piloted it as far as Cheyenne, were the "home folk" on hand. Two of the competing cars in the race were also represented—the Zust by Walter F. Sykes and A. G. Pisani, of the American company, and the Protos by Paul Funke. Max Paroutoud, American correspondent of Le Matin, one of the promoters of the race, also was on hand to greet the racers.

An octet of cars was on hand to carry the crew and the greeting band to the Automobile Club of America. Into them the guests of honor—George Schuster, driver of the car; George Miller, the mechanic, and George MacAdams, who made the run with them from Seattle as correspondent of the New York Times—were placed. The caravan then paraded up Broadway by way of the Wall street district to the Automobile Club of America, where luncheon was served and congratulatory speeches made.

The uncrating of the victorious car on Monday was made the occasion of another celebration. Including a motor truck containing a band and the victorious car bearing Schuster, Miller, MacAdams and Roberts, and the escorting machines, there were twenty-four motor cars in line. The procession paraded through Broad and Wall streets to the city hall, where the winning crew and Messrs. Thomas, Houpt and Bowles were received and congratulated by Acting Mayor McGowan in his office. His honor pro tem then came out and seated at the wheel of the victor, good-naturedly posed for the camera corps. The procession then continued up Broadway and disbanded at the Houpt garage. At the Automobile Club of America Thursday night Orrel A. Parker will deliver a lecture on the race, illustrated by lantern slides.

At the Automobile Club luncheon E. R. Thomas spoke in appreciation of the services of Schuster, Miller and MacAdam in the race, and the splendid work done by Roberts, Mathewson and Brinker in this country. He said that the victory of the American flag was more to him than the victory of the Thomas car. He then announced the intention to enter the car in the 24-hour race. Harry S. Houpt and John E. Bowles spoke for the Houpt company, which was responsible for the entry of the car. Paul Funke, the Protos car designer, declared the Thomas well merited the victory, and that if the Germans had understood the circumstances there would have been no protest ever made against awarding it full honors. Walter E. Sykes on behalf of the Zust car, which competed in the race, also spoke in a laudatory vein.

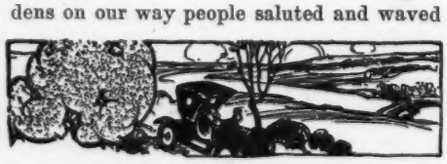
It was announced at the luncheon that the Thomas car was not only the winner of the New York-Paris race, but was likely to be awarded the prize offered by Grand Duke Vladimir for the first car to reach St. Petersburg. It has been conceded that this trophy would go to the Protos, which actually arrived in St. Petersburg first, but when the American crew was there it was said that the trophy was not for the first car to reach there from Vladivostok, but for the first car from New York to St. Petersburg, and that the trophy would be awarded by the Russian Automobile Club in accordance with the decision of the race committee on the main prize. The Thomas car won, as well, the cup given by the New York Times for the first car to reach San Francisco.

George Schuster wins the $1,000 prize offered by Jefferson de Mont Thompson, chairman of the racing board of the American Automobile Association. He offered the prize to the driver who should carry the American flag first to the city of Paris around the world.

Chairman Thompson's making good his offer was sportsmanlike in the extreme and more than generous, in view of the fact that when it was made the schedule of the race called for a run through Alaska, an undertaking that the Thomas car on its arrival in Alaska found impossible to carry out, though of all the contestants in the around-the-world race it was the only one to make the attempt.

Zust Out of Siberia

New York, Aug. 18—A cable dispatch from London says: Scarfoglio has at last reached Europe, after a long delay in Siberia on account of floods, accidents and the illness of his companions on the Zust car, the representative of Italy in the New York-Paris race. Scarfoglio sends the following characteristic dispatch to the Daily Mail from Perm, in east Russia: "Our first day in Europe was magnificent. We raced to Perm, on the Siberian frontier, in 13 hours, through the exquisite slopes of the Urals, the road winding amid lofty fir trees, with trunks as straight as lances. The sun, too, welcomed us in Europe. It was the first time we had seen its rays since we left Irkutsk. From all the gardens on our way people saluted and waved



hands in greeting. When we reached Perm, it was black night, and all the electric lamps in town were lighted. We passed along in their cheerful light, staring at the unfamiliar streets and people with a surprise and enjoyment like that of the rustic who is visiting the city for the first time. This is the promised land. Day by day we near the longed-for haven—Paris, the great French metropolis."

Protests for the Protos

Paris, Aug. 10—Germany is not yet at all reconciled to the loss of first position in the New York-Paris race, as is shown by an official protest sent to the Matin by the Berliner Zeitung am Mittag. Of course no attention can be paid to the protest, the Protos having been officially declared disqualified owing to its departure from the official route. If the Zust finishes, which is practically certain unless some unforeseen accident takes place, it will be given second position to the Thomas. All the glory the Protos can claim is in its record run from Vladivostok to Paris, where owing to being newly fitted out and repaired it was able to gain 4 days on the American car.

DENVER CARDS ANOTHER RACE

Denver, Colo., Aug. 00—This year the Labor day motor endurance races in Denver will be conducted by the new Denver Motor Club and under the rules of the A. A. A., and with that body's sanction. Such is the statement given out by the officers of the club, and it will be the first race ever run in Colorado under these rules. The distance will be 300 miles. To the car finishing the race in the shortest elapsed time will be awarded, in gold, one-half the amount of the total entry fees. The entrance fee is $100, and ten entries already have been received. Denver's new motor club, although scarcely a month old, has 100 members who have leased a suite of rooms in the Savoy hotel, on Broadway, at the head of the row, and are possessed of every advantage of a $200,000 clubhouse, they enthusiastically declare.

NEW DORRIS TRIED OUT

Chicago, Aug. 18—A trial trip of the 1909 Dorris was completed at Chicago Sunday. President Krenning, Designer Dorris, Mr. Rumble, of the sales department; Mrs. Krenning and Mr. Meriam, of the Anheuser-Busch Brewing Co., left St. Louis Saturday morning at 5 o'clock. Litchfield, 66 miles, was reached at 9:10 and Springfield, 110 miles, at 11:30. An hour and 40 minutes was spent here making an examination of Harry Loper's Dorris car the mob burned there. Springfield was left at 1:10 and Bloomington, 199 miles from the start, was reached at 6 p. m. A 10-minute stop was made and Pontiac was reached at 8:20, the odometer showing a total of 241 miles. Here the

party stopped for the night and left at 7:10 in the morning. A stop of an hour and a half was made for dinner at Joliet and Chicago, 351 miles, was reached at 4:20 Sunday afternoon, the average being 17 miles an hour. One puncture caused a delay of 10 minutes. With the exception of a slight adjustment of the oiler when the bad roads were encountered, no work on the car was required. The roads from St. Louis to Dwight were good for Illinois dirt highways; from Dwight to Morris, which is clay and loam, the going was hard because of the recent heavy rains, but from Morris to Chicago the roads improved and were considered good.

TEST FOR TIRE INFLATORS

Paris, Aug. 10—A competition for mechanically-operated tire inflators will be one of the features of the next Paris show to be held in the grand palace during November and December. The idea was put forth last year, but owing to the small number of entries had to be postponed. Any type of apparatus is eligible to compete, provided it does not use compressed air prepared in advance. The basis on which the awards will be made is security and strength of the apparatus, 12 points; ease of adoption to motor cars, 6 points; ease with which the apparatus can be used, 12 points; weight and space occupied, 6 points; ease of attachment and dismounting and care of the apparatus, 4 points; selling price, 6 points, rapidity with which tires can be inflated, 12 points; the use of atmospheric air and conditions of its use, 12 points. The tests will take place in the grand palace, the apparatus thus being required to be attached to a car. A pneumatic tire 935 by 135 millimeters will have to be inflated to a pressure of 6 kilos per square centimeter. Entries, at the rate of $5 per apparatus, are received until December 1 at the Automobile Club of France.

RAMBLER THE WINNER

Denver, Colo., Aug. 17—A Rambler roadster was awarded the first prize in the 3-day reliability contest pulled off July 2 to 4, inclusive. Sixteen cars started on the first day with hoods and battery boxes sealed. The run was to Fort Morgan and return. Three entrants went to the bad this day. The second day's run was to Fort Collins and return. Eight cars came home. The last day's run was to Colorado Springs and return and all the starters got back. They were a Buick, Pierce-Arrow, Great Smith, Reo roadster, Rambler, Corbin, Gaeth and Mitchell, the last three alone having imperfect scores. After examination of the five cars by the judges the Rambler was adjudged to be in the best condition after the 3-days' run and its owner, E. R. Cumbe, was awarded the cup. The contest was promoted by W. G. Beard under the auspices of the Denver Post and was considered a success.

INK FLOWS LIKE WATER

A. C. A. Publicity Man Busy in Europe But His Labors Fail To Produce Grand Race Entries

Paris, Aug. 10—There is something strongly suggestive of the revivalist preacher in the methods of the European publicity writers of the Automobile Club of America. Eternal damnation in the form of disqualification from the grand prix, the Ardennes, the Italian races and even all local events, is painted in lurid colors for the benefit of all those who have dared to cast their eyes toward the cup that will be competed for on Long Island next fall. The official publicity man has even gone to the extent of deducting 100 pounds off the maximum weight, announcing in black type that no car must weigh more than 1,100 kilograms. This caused Victor Breyer, the A. A. A. delegate in France, to break his silence, announcing that the weight had been fixed at 1,200 kilograms, and that any car which had competed in the French grand prix would be accepted for the Vanderbilt cup race.

The news having got abroad that Lautenschlager was to drive in the Vanderbilt race, it was the turn of the publicity man to single him out specially, point to the error of his ways and ask him point blank to repent while there was time. A bright note is occasionally brought into the daily epistles by a recital of the prodigious wealth of the club and the men who are behind it. After hearing into what a world of opulence they can enter by engaging in the Savannah race, the wonder is that entries do not flow. Up to the present, however, all that is announced is a list of firms which might enter, and the list comprises every important factory in Europe. There appears to be a better understanding of the situation by European manufacturers, and whether cursed or blessed they can be relied upon to enter in the race which will give them the greatest amount of material benefit. In connection with this publicity movement, some amusement was caused by the announcement that S. F. Edge, who had built three racers for the grand prix but had not entered them, had applied for permission to run them in the Savannah event. The reply was given him that he could come in if he would consent to abandon those dismountable wire wheels that France refused to allow in 1908, but may adopt in 1909.

Edge has sworn to be faithful to his wire wheels, and would not on any account adopt dismountable rims. When the A. A. A. delegates heard of it, they rushed to Burlington street, according to the publicity man's report and begged that the Napiers should be entered for the Vanderbilt. But whether with dismountable or any other type of wheels S. F. Edge has an idea that his cars should not race, and loyally told the association that he would stand by the National, Royal and Imperial clubs of Europe, and so it is hardly probable that the Napier will be sent across the Atlantic next fall for either the grand prize race at Savannah or the Vanderbilt cup race on Long Island. With S. F. Edge's position in the matter clearly defined, the American emissaries will now seek other worlds to conquer.

LONG TOUR IN SOUTHWEST

Kansas City, Mo., Aug. 17—Laying out the route for the Glidden tour of the southwest is a Studebaker car, with two members of the Automobile Club of Kansas City on board. This tour will be run some time between September 20 and 30. It is to take from 6 to 8 days, according to the report which the pathfinders bring with them on their return. The car started Saturday morning and had traversed a trifle more than 300 miles by Sunday evening. The total mileage of the tour, which is to be for a cup offered by the Kansas City Star, will approximate 900. Just what rules will govern is as yet undecided. If there is a tie, the cup is to become the property of the club, so as to avoid a run-off. From Kansas City, the route proceeds 14 miles in Missouri, south and west and then enters Kansas. It passes through Olathe, Ottawa, Emporia, where the first night stop will be; Strong City, Florence, Peabody, Newton, Wichita, Wellington and Caldwell. All of these are good towns. Crossing the Oklahoma line soon after leaving Caldwell, the route takes in the following towns in the new state: Pond Creek, Enid, Kingfisher, El Reno, Oklahoma City, Guthrie, Perry and Newkirk. Near the last named city, it crosses again into Kansas, passing through Arkansas City and Winfield and then due east through Independence and Galena to the Missouri state line. In Missouri, the following towns are on the route, returning to Kansas City; Joplin, Carthage, Nevada, Rich Hill and Harrisonville.

CAMERON THE WINNER

Baltimore, Md., Aug. 17—The Cameron won the match with the Ford and Overland, which was the result of a challenge issued by the Cameron company to pit its car against any other make selling for under $1,500. The Cameron proposed an economy tour, a hill-climb and a speed trial, but only the first two were contested, for the Cameron won both the economy test and the hill-climb, making unnecessary the speed trial. The fuel test was over a 65-mile course, which was negotiated by the Cameron on 1⅞ gallons of gasoline and 1 pint of lubricating oil. The Ford used 2⅝ gallons of gasoline and the Overland 3⅝ gallons. The climb was on a hill ⅞ mile in length and a grade running from 8 to 23 per cent. The Cameron did 1:35⅕, the Ford 1:40⅕ and the Overland 1:55. In the fuel test the Cameron was the only one to announce the quantity of lubricating oil used.

PARK SUPERINTENDENTS DISCUSS ROADS

MINNEAPOLIS, MINN., Aug. 14—Park superintendents from the principal American and Canadian cities, representing the park interests of all sections of the country, found in the road-oiling and dust-laying problem a subject which engrossed the greater part of the discussion before the American Association of Park Superintendents, in annual convention in Minneapolis this week. The preservation of macadam, gravel and dirt surfaces, against the destruction wrought by the motor car and the finding of a satisfactory binder, or surface dressing, to prevent dust and to preserve the smoothness of the highway, were the most important subjects taken up at the park superintendents' convention. Led with a thorough and comprehensive paper by M. H. West, superintendent of Lincoln park, Chicago, the "experience meeting" of the park directors brought out specific data as to the experiments that are being conducted in various American cities, and the success which is attending them.

Engineers representing other highway interests than those directly under park superintendents were present, and discussion covered every phase of highway preservation. The success reported by Superintendent West of Chicago, in the experiments which have been conducted in that city, has had the effect of directing the attention of the park superintendents to the Chicago oiling and surfacing methods; and it is likely they will be tried in many other cities. Mr. West was emphatic in his declaration that the directors of city parks should not prohibit the use of tire chains or other anti-skid contrivances, because of their possible injurious effect upon macadam and other roads.

"By closely watching the effects on road surfaces, caused by various non-slipping tire devices used by motorists to prevent injury to themselves and others on treacherous pavements," said Superintendent West in his address, "I have come to the belief that too much stress has been laid to the damage done to road surfaces by chains, etc. Assuming that damage is caused by the release of a vacuum formed by a flattened tire under great weight, and by the slipping of the tire under the great tractive force exerted by the rear wheels, it is obvious that any device which would tend to prevent this vacuum, or to prevent the sheering stress from being exerted on the surface, would help in a degree to maintain the road, rather than the reverse. However, these effects are exerted to a more or less degree even when chains are employed, and I mention this point only to observe that it does not seem justifiable to enact rules prohibiting the use of devices by which the safety of individuals is guarded, when by so doing only a questionable harm to public property is averted."

Mr. West's paper covered the experiments which have been made in Chicago, to find a lasting macadam surface which would wear without protection, and the subsequent experiments to find a suitable method of treating macadam surfaces to lay the dust and give them wearing qualities. He stated that the effort to lay an unprotected macadam proved unsatisfactory, and experiments along this line had been practically abandoned.

"With the idea of so constructing macadam roads that they would be able to withstand the onslaughts of motors without resorting to the use of asphaltic binders, a number of experiments have been conducted on the Lincoln park system during the last 3 years," said Mr. West. "Stone of various kinds and sizes has been employed, laid and rolled in various ways, and top dressed with different kinds of screenings and sand. The best results in this direction were achieved by the following method: The road to be resurfaced was first scarified and re-shaped, after which a layer of 3-inch limestone macadam was spread upon the surface and rolled thoroughly, while fine limestone screenings were washed into the interstices. The road was then allowed to dry out, after which torpedo sand or ¼-inch screenings, with the fine part removed, were spread over the road and rolled lightly with a 6-ton roller. The theory of this method was that the shifting coarse sand or screenings would give off little or no dust even when dry, while at the same time the fine limestone binder would be protected. The large size of the stone on the other hand would form an anchorage sufficient to resist the action of motor cars. As a matter of fact, this particular piece of road came out after a year's hard usage in even better condition than many pieces with protected surfaces; while macadam, laid in the ordinary way, using 1½-inch stone and binding in the usual manner, barely remained in place long enough to allow the road crew to get out of sight of their work."

Superintendent West stated that the alternate freezing and thawing in the spring worked havoc to such a road, however, and that the experiments had been on the whole unsatisfactory. Later experiments were therefore along the line of protected surfaces. Calcium chloride and sodium chloride were tried, but were found to have no beneficial effect upon the lasting qualities of the road, and succeeded only in laying the dust at a cost slightly under that of water. Experiments in Chicago, both with oils of paraffin and asphaltic bases, and of specific gravity ranging from 15 to 27 degrees, has resulted in the development of an oil solution which has given better satisfaction than any other material used.

"The emulsion is made in a specially prepared plant," said Superintendent West, "fitted with a series of tanks connected with each other, and with a medium-sized steam pump. The oils are mixed in the proportion of one part residuum of about 19 degrees specific gravity, with three parts paraffin base fuel oil. One part of the mixed oils is then incorporated with nine parts of hot water, to which naphtha soap is added, in the proportion of 15 pounds of soap to 500 gallons of water. Roads treated with five applications of emulsion came through the winter in good condition, with the exception of some of the main boulevards, which were subjected to unusually heavy motor car traffic. During the early spring, a number of heavy snowstorms occurred and the motor cars, taking the beaten track, rapidly cut through the surface, scattering the macadam in all directions. In some cases it was only necessary this spring to repair the four parallel tracks to put the road once more in condition.

"In using heavy residuum oils from California, Texas and Kansas on the road surfaces, the best results have been obtained by first scarifying the road and after shaping, rolling thoroughly with a heavy roller, at the same time applying water. No binder is used other than that found in the old road material. After drying, the surface presents a rough but firm appearance, which affords excellent penetration to the binding fluid. The hot asphalts are then applied, followed by a layer of torpedo sand or screenings."

Resurfacing of this kind, said Mr. West, can be done for 7 to 15 cents per square yard, assuming the cost of the oil or tar to be from 4 to 10 cents per gallon. He found that such roads would give satisfactory wear under heavy usage for from 12 to 18 months. No water sprinkling is necessary, and the cost of maintenance is considerably less than that of driveways which have to be sprinkled and continually patched.

The "ideal pavement," toward which engineers and park men are working, and which will meet the requirements both of motor and horse traffic, was described by Superintendent West as follows: "Such a pavement should present an easy riding, malleable and slightly elastic surface of a color which will be restful to the eyes and which will draw the heat, as in the case of the black asphalt pavements. It should emit no disagreeable odor, should not crack or chip in cold weather, nor become sticky or wavy under summer use. It must be easily cleaned, sanitary and dustless. It should present a surface rough enough to prevent skidding or slipping, yet it should be sufficiently smooth to present a good appearance and to cause no vibration while being traversed."

To bring about this end, in the opinion of the park superintendents who debated

the question in Minneapolis, it will be necessary to secure only a 1 or 2-inch coating for the macadam and other base roads which the park systems now have. The experiments now being made with tar and asphalt as binders, were discussed from the viewpoint of the experiences of the various cities.

Superintendent West reported two satisfactory roads under use in Chicago, where a binder melting at about 200 degrees Fahrenheit had been heated to 315 degrees, poured into the interstices of limestone 3 inches in diameter, and rolled thoroughly. Before it had a chance to cool, heated sand was spread upon the surface and rolled. One application of oil emulsion was then made, to soften up a part of the binder so that it would work through the sand finish. Surfacings of this kind, he said, can be laid at a cost of 40 to 60 cents per square yard.

Superintendent Wirth, of Minneapolis, stated the problem of many cities, where the park systems have not yet secured much macadam roadway. In the case of Minneapolis, as of some other cities, he said, the question is: What oil can be used on gravel and dirt roads to lay the dust, if only temporarily.

Superintendent West, of Chicago, advised either buying the cheapest possible oil, which would be a paraffin oil, and applying in small quantities for dust-laying, or else going to the greater expense of cleaning the roads of detritus, and trying to incorporate them into an asphaltic oil to give a wearing surface.

Minneapolis is now using a paraffin oil for dust laying. In the first use, it was spread too thick, but by adding sand, it has produced a surface entirely satisfactory both to motorists and horsemen. Superintendent J. W. Rodgers, of Cincinnati, reported the use of an emulsion similar to that used in Chicago, and described above, except that 25 pounds of soap, instead of 15 pounds, was used.

"We have from 25 to 100 motor cars and other vehicles passing over," said Mr. Rodgers, "and there is not enough material there to cement the gravel together, but we find it served admirably to lay the dust. If you take this emulsion and apply it once or twice each season, at intervals of 6 or 8 weeks, I think you will find it thoroughly satisfactory. The only objection is where you have a slope horses will slip on it."

The experiences of Kansas City, as related by Superintendent W. H. Dunn, have shown that it is impossible to try to keep clay roads in condition with paraffin oil, unless the top of the road is perfectly bonded and solid. Kansas City is now preparing to heat an oil of asphalt to alleviate the slippery conditions which are found on the steep grades.

City Engineer Rinker, of Minneapolis, stated that the city is spending $140,000 for sprinkling 300 miles of streets which is within its limits.

AFTER RACE IN A PARK

Philadelphians Propose Road Contest To Celebrate Founders' Week in Quaker City

Philadelphia, Pa., Aug. 17—Next October this city will have a founders' week celebration, when all the scattered sons of the Quaker City the world over will hie back to the old burg to participate in the enjoyable program which is already near completion. One of the sub-committees appointed is the motor car committee, W. Wayne Davis chairman. This committee believes that the founders' week program will lack completeness without some red-letter motor event to keep the people interested. To that end the Quaker City Motor Club, through its secretary, H. C. Harbach, has petitioned the commissioners of Fairmount park for permission to use certain roads in the western section of that popular pleasure-ground for the purpose of running off a 200-mile stock car race, the event to be decided between 6 and 10 o'clock on any morning during founders' week suitable to the authorities. The club proposes to defray all the expenses of such an event—including publicity, prizes, oiling, preparing and guarding the course—incidentally returning everything to its original condition—paying competent officials and erecting spectators' and press stands—in return for which it asks for the unrestricted use of the roads on the day of the race and for practice during the early-morning hours of the week preceding from daylight to 7:30 a. m.

City officials generally favor the scheme, and although there is a speed limit provided for in the park regulations, there is another proviso which allows the commission to set aside the park roads for any purposes which it may deem desirable. Legal lights say that if the commision thinks favorably of the scheme there will be little difficulty in finding a way around the obstructing regulations.

Officials of the Quaker City Motor Club, before making the request of the commission, carefully ransacked West park for a suitable course, and have already evolved a 7½-mile circuit, which with banking at some of the sharp turns and a cut-off or two, can be made as safe as the Briarcliff or the average Vanderbilt course. With an aggregate of a quarter of a mile of specially-built new roads the length of the course could be increased to upward of 10 miles, it is estimated.

All Philadelphians—officials and private citizens alike—are naturally proud of their splendid park, and would hesitate to allow any event in its limits which might mar its beauty in any way. But the Quaker motorists have made it plain that while providing a grand public spectacle to add to the founders' week hilarity, they will do so at their own expense and restore the roads to their former condition; and there is in consequence a strong sentiment in favor of giving them a chance to make good. The commission has promised to act upon the application and announce its decision at its next meeting. Hope of securing this permit is based upon the decision of the commission to give the matter due consideration, which shows the authorities do not consider it such a hair-brained idea after all. Indeed, the members of the motor club believe they will be granted the permit without delay when the commission meets.

DECIDED TO BECOME OUTLAWS

New York, Aug. 18—The Motor Racing Association, a New York organization, made up of four importers, two makers and two local agents, first organized at the Metropolitan Motor Association, has decided to run its 2-day meet at the Brighton Beach track on Friday and Saturday, September 18 and 19. At the meeting last Friday night, at which the dates were fixed, it was decided to ask for no sanction from the race-governing body. The reasons for this action are stated in the official announcement of the proceedings to be: "In order to obviate the necessity of taking sides in the existing controversy between the A. A. A. and the A. C. A., it was decided to hold the meet without asking for the sanction or aproval of any organization." Inasmuch as the New York club makes no pretense of issuing sanctions, this "middle course" was of necessity directed solely against the American Automobile Association and in opposition to the policy of supporting the national body, formally decided upon by the N. A. A. M., the A. L. A. M. and the A. M. C. M. A., representing the American trade. Besides the 24-hour race, it is announced that there will be a 50-mile contest, some sprints, and several match races. The entries will close on September 1, and be restricted to members of the association.

AGAIN THE MOTOR CAR

Spokane, Wash., Aug. 14—Dale H. Preston, driving a 30-horsepower Corbin, sent over a quarter of a mile of stubble field and 1¾ miles of country road at a speedy clip, was the chief factor in lowering the world's record in producing biscuits made with flour from the plump heads of grain which nodded in the morning sun 22 minutes before. The feat was performed at Waitsburg, Wash., south of Spokane, the grain being grown on hillside farm owned by N. B. Atkinson, president of the Washington State Farmers' Educational and Co-operative Union, 2 miles from town, and the test was witnessed by R. M. Breeze, mayor, and fifty residents of the town. The grain was hauled 2 miles in the Corbin, and was ground at the Preston-Parton plant, the oldest flouring mill in the state of Washington. The biscuits were made in a gasoline oven by A. Beck, master baker, and fifty persons, who ate them, declared "they were almost as good as mother used to make."

WORK FOR GOOD OF ALL

Philadelphians Unite To Look After Interests of the Entire Motoring Community

Philadelphia, Pa., Aug. 17—Following upon the meeting several weeks ago, in the quarters of the Automobile Club of Germantown, to discuss the formation of an alliance of local and near-by clubs for offensive and defensive purposes, a committee was named last week to bring about uniform action when matters of interest to all come up for consideration. This committee, which consists of one representative from each club, is made up as follows: C. H. Wheeler, chairman; Automobile Club of Germantown; Stedman Bent, Automobile Club of Philadelphia; Edwin S. Nyce, Norristown Automobile Club; John B. Bird, Delaware Automobile Association; A. H. Tomlinson, Delaware County, Pa., Automobile Club; G. Douglass Bartlett, Quaker City Motor Club, and S. Boyer Davis, secretary and treasurer, Automobile Club of Philadelphia.

The name decided upon for the new body is the "Committee of Allied Interests of the Automobile Club of Philadelphia and Vicinity," and among the objects it hopes to accomplish are the preparation of road maps and route information; the erection of warning and direction signs; the repair of roads, if essential, and where it can be effected only by the motorists themselves; the compilation of touring information, not only in regard to roads, but as to accommodations, garages, repair shops and stations, and where gasoline and oil may be purchased; and the care of local legislation, city and township ordinances, and the administration of the law and of such ordinances.

In the past all of the clubs represented have done more or less work, in a desultory fashion, along the lines represented above, and it was pointed out at the preliminary meeting how much more effectively—and economically—this work could be done if all hands would combine. When a matter of vital interest to motorists of this vicinity confronts the clubs in the future, there will be no separate meetings of the clubs, the naming of separate committees, and the incurring of expenditures which in the aggregate would amount to quite a respectable total. Instead, the matter will be turned over to the committee of allied interests, which has full power to act.

Funds for the carrying on of the work of the new committee will be forthcoming from the treasuries of the clubs represented, and while the expense incurred will be considerably less, the promptitude and thoroughness with which the several tasks will be accomplished will be in marked contrast with the conditions that obtained in former times, when, with each club acting separately, much valuable time and the advantage of concerted action were lost.

Another matter which will be taken up at an early date by the committee of allied interests will be the formulation of a scheme to assist in putting a stop to the practice of illegal speeding, especially in towns and villages, and the bringing to speedy punishment of all drivers guilty of infractions of the laws in this particular.

The majority of the committee are lawyers, and in the event of the necessity for quick action in matters affecting motor legislation this is a decided advantage. In such work as the signboarding of the roads, and the erection of warning notices, the saving that will be effected in the future through the impossibility of duplication will in itself be considerable. The new committee will get to work at once and outline a system of procedure. Meetings will be held upon the call of the chairman, and with the advantage of compactness quick results may be looked for when it tackles any proposition in which the motoring fraternity is interested.

CREAM CITY'S MOTOR CARD

Milwaukee, Wis., Aug. 17—The Milwaukee Automobile Club is closing a busy season, but its main events are yet to come. The beginning of the end will be the Milwaukee-Manitowoc week-end run on August 22. The start will be made at 8 o'clock on Saturday morning, and it is intended to make the 77-mile trip by mid-afternoon. E. J. Carroll, formerly manager of the Milwaukee St. Charles hotel, now in charge of the Williams house at Manitowoc, has opened his hostelry wide for the reception of his old friends, the M. A. C. members. Much other entertainment has been provided for Saturday night and Sunday morning, and in the afternoon the tourists will start back, reaching Milwaukee in the evening. On September 1 the club will turn out for the annual orphans' outing. Fifty or more cars will pick up the parentless ones at 8:45 a. m., whiz to Washington park, for a big dinner, and then drive around the city. On September 19 the closing event of the season will take place. It will be the 50-mile race between a Locomobile and a Pope-Toledo for a purse of $1,000 hung up by the Milwaukee Automobile Club.

CLIMB AT MINNEAPOLIS

Minneapolis, Minn., Aug. 16—The Minneapolis hill-climbing contest for the Journal trophy, to be held next Saturday, is attracting general attention. The event was postponed in order that cars used in the Chicago contest might compete, and it is expected that many of the Algonquin prize-winners will be entered in Minneapolis. At present the entry list gives promise of exceeding the Chicago total, as the hill-climb has always been one of the most popular of Minneapolis motor events. Five handicap events and one free-for-all are on the card, the formula to be used being that originated by the Chicago Motor Club and used at Algonquin.

TROPHY TO THE NAPIER

Newton Wins O'Gorman Cup Race at Brooklands Track in Which There Is a Fatality

London, Aug. 9—Newton in a Napier won Mervyn O'Gorman's trophy for unlimited racing cars which was contested for for the first time at the bank holiday meet. Hutton in a Mercedes was second. The O'Gorman trophy originated at the now famous Ostend conference, Mervyn O'Gorman, one of the British delegates to that gathering, being of the opinion that valuable experience could be obtained by leaving manufacturers altogether unfettered in the design of racing cars. He therefore offered his cup, to be competed for annually, as a rival to the 155 millimeter racers, no restrictions on engine size or weight being imposed.

Immediately upon the conclusion of this race the meet was abandoned because of a fatality which occurred during the contest. During the twenty-sixth round, while H. G. Burford's Mercedes was traveling at 110 miles an hour a tire burst and the car leapt over the banking into a field by the side of the Wey river. Charles Lane, who was driving, was thrown across the stream and rendered unconscious. William Burke, his mechanic, who was also shot out about 30 yards, was killed on the spot. Immediately on turning over the car took fire and in a few seconds was but a heap of twisted metal.

During the same race, and a few minutes before the fatal accident, the 60-horsepower Napier driven by Reynolds, lost a tire, swung round on itself, ran down the slope to the inside of the track, and after striking a raised bank overturned. Reynolds and Clark were thrown out but suffered no injury. At the conclusion of the race, which was won by Newton in a Napier, with Hutton in a Mercedes second, the meet was abandoned.

An unusual feature of the bank holiday program was a private race between Miss Thompson in an Austin and Miss Elliss in an Arrol-Johnston, the first named winning by about 200 yards.

Owing to the recent death of Cecil Edge, the private match between Charles Jarrott in a grand prix Dietrich and S. F. Edge in the 155-millimeter Napier, which would have been entered in the French event if dismountable wheels had been allowed, was not held; it was the Napier car, however, which won the O'Gorman trophy.

The meeting was a 2-day affair, Saturday and Monday. On the first day the all-comers' handicap at about 5¾ miles was won by Jarrott's Sizaire-Naudin, with an allowance of 4 minutes 24 seconds, which was considered too liberal for the little French car. A Ford runabout, allowed 2 minutes 30 seconds, competed in this, running second in its heat and sixth in the final. The second Montagu cup at a dis-

tance of about 30 miles, went to Edge's Napier, driven by Newton and which averaged 101½ miles an hour. A Sizaire-Naudin won the Merit trophy over 5¾ miles, while the journalist handicap at about 5 miles, was won by J. Flatau, of the Daily Mail, in a Belsize. On Monday the August trophy was the only other race finished besides the one in which the accident occurred. It was 5 miles and was a handicap which was captured by C. Hobson in a 27-horsepower Nagant-Hobson.

ALMOST A GRAND PRIX FIELD

Paris, Aug. 10—Although the Italian race meet at Bologna has obtained the entries of most of the machines which competed in the French grand prix, it has been decided to hold the lists open 8 days longer than was originally intended, with the object of giving late-comers an opportunity of putting in their cars. Contrary to expectations, the Mercedes has put in the grand prix team, the three cars to be handled by Lautenschlager, Salzer and Poegge. Up to the present the Benz has not engaged, but there is a possibility of them doing so now that an extension of time has been granted. With the exception of Renault and Brasier, who have almost always made it a rule never to race in more than one event a year, all the French grand prix cars will line up at the Italian meet. They include the full team from the Bayard-Clement, Mors, Dietrich and two from the Motobloc. Italy had put in the three Fiats which Nazzaro, Lancia and Wagner handled in the grand prix, and the Itala a full team, with Cagno and Henry Fournier as two of the drivers. With the three S. P. A. cars which make their first apearance at Bologne, the race is already assured of twenty-three starters. The trophy this year is the Targa Florio, which has previously been competed for by cars of 130 millimeters. For 1908 it is the Targa Bologna which is offered as the principal trophy for the 120 to 130-millimeter racers, the entries for which now stand at seventeen.

RECORD RUN BY BRINKER

Denver, Colo., Aug. 16—The excitement of the week, and that will remain an epoch in western motoring, was the remarkable run made by Harold Brinker in a Denver-made Colburn Forty this morning from Colorado Springs to this city. The total distance between the two points is 72 miles, but Brinker ripped off a tire at Overland park, 4 miles from the Denver clubhouse, so time was taken at that place, giving a total of 1 hour 43 minutes for the 68 miles over a mountain road. At the rate Brinker was going, without mishap, he would have made the courthouse in about 4 minutes more, or a total of 1 hour, 47 minutes for the 72 miles. This time is 28 minutes better than that made by the fastest express train between the two points, and 17 minutes better than the time made last summer by E. Linn Mathewson in a Thomas Forty.

ARMY TO USE MOTORS

Mechanical Means of Transport Will Be Employed Exclusively in French Maneuvers

Paris, Aug. 10—For 14 days over 100,000 men will be dependent on the motor car for food and drink, the French army authorities having decided to use mechanical means of transport exclusively in the next maneuvers to be held in the neighborhood of Blois, Tours and Chateroux. A total of eighty vehicles are required to carry victuals to the fourth, fifth, eight and ninth army corps which will be in the field. As the army does not possess this number of vehicles, an appeal has been made to manufacturers to meet the deficiency by the loan of motor trucks and drivers. Each vehicle must have a load capacity of not less than 2 tons, and must be capable of a mileage of not less than 60 per day, half of this distance being under full load. Although the pecuniary advantage is but slight, there is little doubt but that the eighty trucks will be supplied by French manufacturers, and that the horses of the army service corps will be left without work during the military operations. The indemnity to manufacturers is at the rate of 20 cents per horsepower per day, fuel, oil and grease being provided by the army. Drivers are allowed a special indemnity of 50 cents per day, which is really handsome treatment compared with the 1 to 5 cents received by the privates in the line regiments. In practically every case the men having charge of the military motors will be workmen of the firm engaging the vehicle, who are liable for service as reservists in the standing army. Special facilities are allowed by which men who would normally have to pass 15 or 20 days in some other branch of the army are allowed to fulfil their military duties at the wheel of one of their employer's army service wagons.

The usual method of procedure during the maneuvers is for the motors to be divided up into groups according to their power and speed, a certain number being allotted to each army corps. Every morning at daybreak the motor convoy, under the charge of an officer who regulates the speed and sets the line of march, starts out for the camp which it is required to furnish with provisions, and water if necessary. The average distance from the base to the fighting line is from 30 to 35 miles. It is not only always over the main roads, for as the troops move away from the center of civilization the wagons have to follow them. Usually by noon the loads have been discharged, and after lunch at the camp or on the roadside the convoy sets out empty for the army base. If there is any necessity for it, the sick men of the troops are carried back to the headquarters. On arrival each driver prepares his vehicles for the next day's journey, undertakes repairs or adjustments if any are required, then loads up, covers all with a waterproof tarpaulin, and leaves the vehicle ready for another daybreak start.

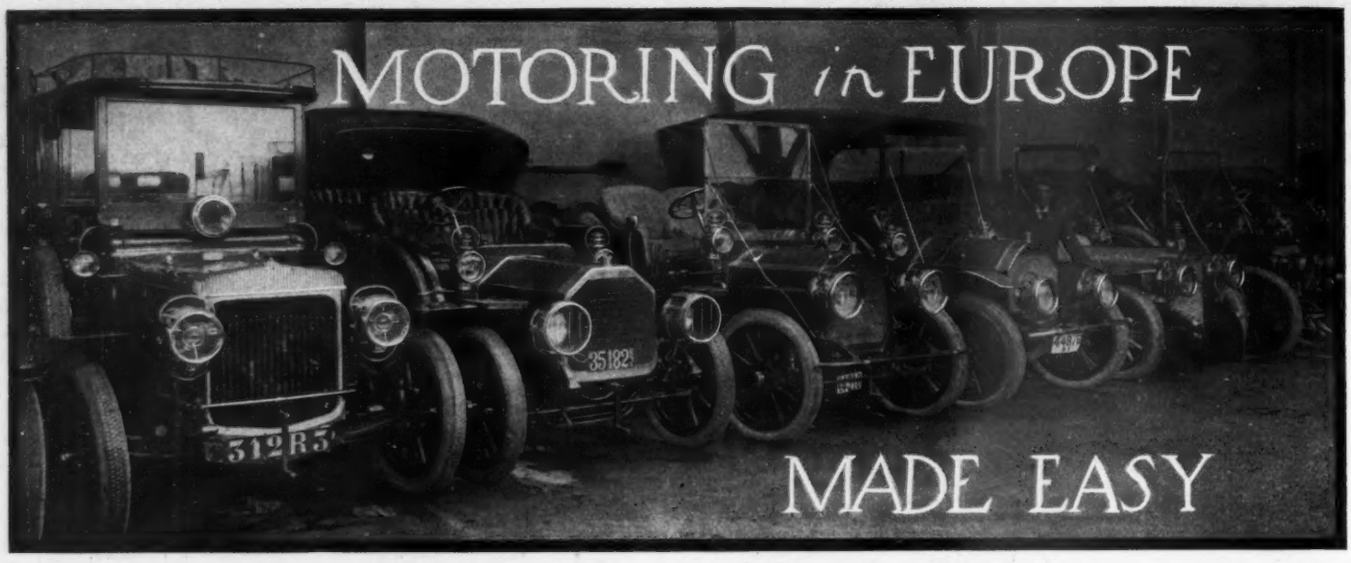
The international industrial and commercial vehicle contests to be held near Piancenza, in Italy, next month, promise to bring together the largest number of motor vehicles of the utility type ever seen in Italy. Entries already in hand include: Sauer, Swiss, three trucks; Florentia, two vehicles; Suddeutsche Automobil Fabrik Gaggenau, three trucks; Fiat, three trucks and two omnibuses; S. P. A., four trucks and one omnibus; the Yorkshire Patent Wagon Co., one truck; Soller, Swiss, one truck; G. Stampa, one vehicle; Syndicat Savoia, one vehicle; A. G. E. S., two vehicles; Arrol-Johnston, two vehicles; Berliet, one vehicle; Gobron-Brillie, two omnibuses; Peugeot, three vehicles.

INDIANA BOOKS A TEST

Indianapolis, Ind., Aug. 17—Members of the Indianapolis Automobile Trade Association have decided to hold a 2 days' reliability run some time next month and the announcement has created considerable interest throughout the state. While it will be primarily for local dealers and manufacturers, those throughout the state will not be barred and will make entries. It is likely the rules of the recent Glidden tour, with a few slight changes, will be adopted. The committee has not decided the route so far, but a majority of the members prefer a run to French Lick and return. The route going would be through Columbus and returning through Martinsville, with a night at French Lick. At the preliminary meeting held last week, Fred Willis of the H. T. Hearsey Vehicle Co. was appointed chairman of the committee on arrangements. His assistants are: G. A. Weidley of the Premier Motor Mfg. Co.; Frank L. Moore of the Fisher Auto Co.; A. C. Newby of the National Motor Vehicle Co. and Frank J. Fanning, the new Indiana representative of the Chalmers-Detroit. This committee will have a meeting some time this week to take the matter up and arrange further plans.

FORTY IN 4-INCH RACE

London, Aug. 12—Total entries for the British 4-inch race, the limited bore event to be held on the Isle of Man, Thursday, September 24, stand at forty, five additional cars having been put in at double fees. The late-comers are two S. C. A. T., a Vinot, a Piccard and a Rover. The course on which the race is to be held is about 38 miles round; having to be covered nine times, the exact total distance is 350 miles. A large portion of the old Tourist trophy route has been selected, with a deviation to avoid running through the town of Peel, which has diminished the total distance about 2 miles. Practicing has been arranged for during a couple of hours for 14 days preceding the race.



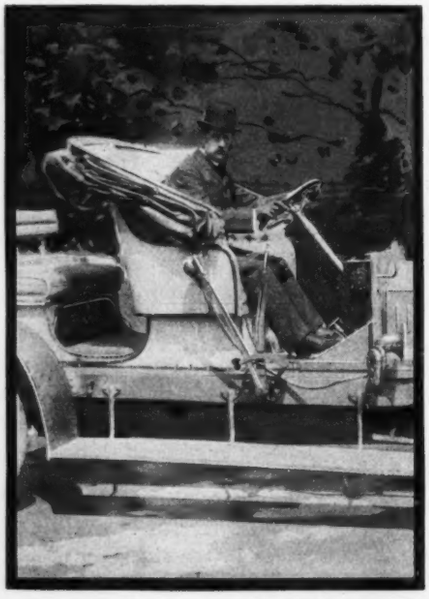
PEERLESS, PACKARD, PIERCE AND THOMAS CARS IN A PARIS GARAGE

PARIS, Aug. 10—It was while sitting at the terrace of a popular Parisian cafe, engaged in that essentially French triple occupation of sipping, gazing and idly chatting that the realization came that European touring had undergone a serious change during the past 2 years. Instinctively, as the result of long practice, the writer's eye was following the interminable procession of taxicabs, touring cars, heavy limousines and dainty town vehicles that almost monopilizes the Rue Royale during the afternoon. Suddenly the file of cars from French, Italian and German factories was broken by the appearance of a Packard, a 1907 touring model, containing a party of Americans evidently touring France. Five minutes later a Pierce had gone by, and almost on its heels was an old gentleman driving a White steamer. Before the drink was finished a Peerless touring car and a little Ford runabout in the hands of a demonstrator, had skimmed along in the dense stream of traffic, making five American cars in a period of a quarter of an hour.

Even so recently as two seasons ago it would have been impossible to have seen in any part of Paris at the commencement of the touring season such a number of American cars within such a short period. The obvious conclusion was that Americans are touring Europe in their own cars more extensively than was the case 24 months ago.

Except by getting figures from all the transportation companies it would be impossible to ascertain exactly how many American tourists annually visit Europe en car. But the interesting phase of the matter is that private owners are now extensively advertising the home construction by bringing over cars from many of the best American factories. It was the invariable rule but a short time ago that American motorists in Europe should use cars supplied from the factories of France and Germany. Probably the number of multi-millionaires who buy a new foreign car immediately on arriving from the states, tour with it for several months in Europe and either sell it or ship it over to America at the end of the trip has not seriously diminished.

A new class, however, has been added to this floating population: Americans of rather more moderate means who, owning a good, serviceable touring car, take it with them on their trip abroad, tour with as much comfort and reliability as their countrymen mounted on the foreign article, and return home delighted with their visit and their machine. A casual visit to one of the larger Parisian garages, the American garage in the Avenue Montaigne, found seven American cars one morning in early May. The same morning Fournier's garage had three cars manufactured in the states, and at the Automobile Club of France garage two were in temporary storage. Naturally the number fluctuates considerably, for foreign motorists are essentially birds of passage, but some idea of the number of American cars passing through Paris may be gathered from the fact that the records of the American garage show a total of sixty for the past season, the number being made up of thirty-five Packards, the rest being largely Pierce and Peerless cars. The Packard agent in Paris was last year in touch with close upon 200 different parties touring Europe in the well-known Thirty from Detroit, and had had communication from forty parties up to the middle of May of the present year. It should be remembered, too, that a very large number of owners pass through Europe without ever troubling the foreign representative of the car they own.



VICTOR BREYER, A. A. A.'S FOREIGN REPRESENTATIVE

An enormous impetus has been given to touring in continental Europe by the arrangements made by English, American and French association to break down, or at any rate simplify the formalities which governments and nature have put in the way of free intercourse. Such French associations as the Touring Club of France, the Association Generale Automobile and the Automobile Club of France are constantly striving to improve conditions not only for their own members but with a view to attracting visitors from abroad. There is a lot of detail work, however, which even these admirable bodies cannot attend to and the gap has been filled by the work of the English associations and more recently by the American Automobile Association. As is now generally well known, every member of the A. A. A. touring in France is entitled to the services of Victor Breyer, the foreign delegate installed at 4 bis Rue Descombes, Paris. There are probably few men in France who have been more closely connected with the sport and industry on this side of the Atlantic or who are so well fitted to assist American vistors with advice on touring, the hiring of cars, the engagement of chauffeurs or the formalities which are the necessary attendants of a visit to a foreign country.

American visitors largely profit by the excellent foreign touring branches of the various English association. The Automobile Association, the Motor Union, the Royal Automobile Club, and the British Branch of the Association Generale Automobile at 166 Piccadilly, London, have all studied the European touring question so thoroughly that their members can enter continental Europe with about as little formality as a motorist crosses from Manhattan island to the Jersey shore. Samuel A. Miles, who recently toured in France in a Pierce car, declared that the Automobile Association in London fitted him out so thoroughly before leaving for France that he had not even to attend to his own gasoline tank. At the present time an arrangement is under consideration by which the members of the A. A. A. can have full benefit of the Automobile Association touring bureau not only in London but in all such ports as Havre, Cherbourg, Boulogne, Bordeaux, Marseilles, Dover, Folkestone, Newhaven, Southampton, Plymouth, etc.

By the aid of these various associations all the formalities such as registration of car, obtaining of driving licenses, payment of custom duties can be settled before leaving England. On arrival at the foreign port practically all that remains to be done is to attach the license pads, have the triptyque signed by the customs officer and drive away. Further, officers of the Automobile Association, the Association Generale Automobile and the Motor Union are in constant attendance at the French ports ready to assist arrivals armed with the badge of their respective organizations, and to give whatever advice may be needed. Doubtless as soon as the arrangement between the A. A. A. and the Automobile Association is completed it will be possible for American motorists to make all custom deposits in New York, to arrange for driving and car licenses before sailing and to be met at any port in Europe by an English-speaking official competent to give all necessary help.

The latest and most interesting scheme of the Motor Union of Great Britain and Ireland is the arranging of co-operative continental tours for its members. All formalities in connection with these runs are taken charge of by the union, the individual member having nothing more to do than run his car down to the steamer at the appointed time. The courier accompanying the party distributes license pads and driving permits immediately on arrival and attends to custom regulations. Advance arrangements having been made for hotel accommodations, at spots from 60 to 70 miles apart, each party is given the route cards, showing alternate roads to suit the different powered cars, and left free to proceed independently, all however, meeting at the same spot at night. Though of very recent origin, the scheme has immediately proved popular.

Though in the present perfected condition of the car a machine can undertake a foreign trip with every hope of being independent of the factory or repairmen, occasions do arrive either by reason of accident or otherwise, when it is convenient to obtain spares without sending over the Atlantic for them. It is for this reason that the Packard company and the Pierce company have opened Paris depots for the convenience of their customers touring Europe. At 13 Cite de Pusy, in the Boulevard Periere, Paris, H. D. Wilson, the Packard agent, maintains practically a complete car in parts and is able to furnish any spare that may be required at a moment's notice. During the year that the office has been in operation Mr. Wilson declares that he has not sold enough parts to pay for lighting. A few small parts have been sold and a little repair work done in the Paris shop, but the total in this line would not be sufficient to run the establishment for any great length of time.

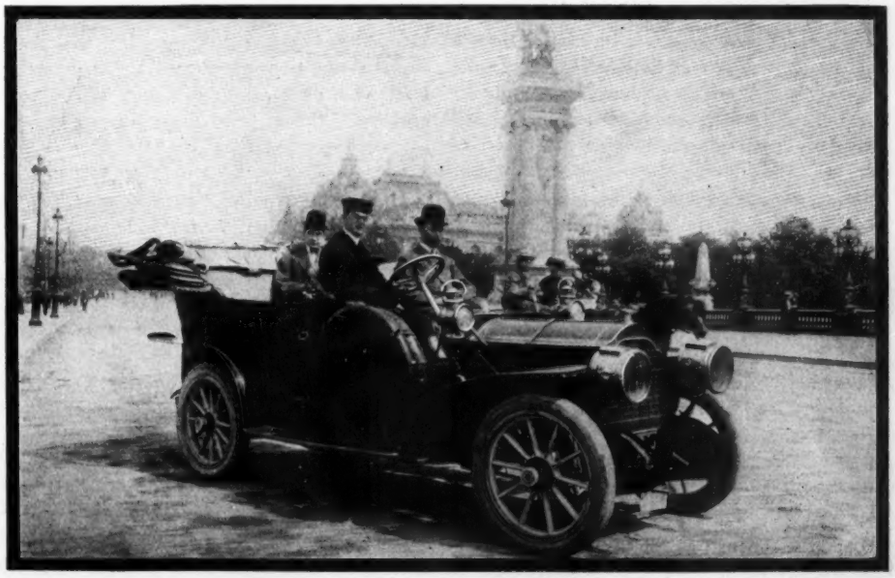
The office is maintained more as a convenience to customers, for however serious a road accident they may be involved in there would be no necessity to wait for parts coming from the home factory. The owner of a Packard touring abroad need never fear being stranded for want of some special part unknown to Europe. A large amount of useful work is also done in planning tours, advising on methods of shipment, custom formalities and touring regulations.

In October, 1906, the George N. Pierce Co. opened its Paris touring bureau and spare parts depot at 22 Avenue de la Grande Armee, in charge of N. S. Goodsill. According to the European representative fifty Pierce Great Arrow cars were dealt with during the season of 1907. The number during the present season—up to middle of May—has reached twenty-two, including the 30-horsepower four-cylinder, the 45-horsepower car and the large and small sixes. A complete stock of parts is maintained for all models, arrangements being such that spares can be sent off at a moment's notice on receipt of telegraphic advice. Another matter of importance to Pierce owners is the recent establishment of a Paris branch by the Goodrich Tire Co., located in the Rue Brunel, a few yards from the car depot. As all Pierce cars are shod with Goodrich shoes the arrangement is a convenient one for these tires exactly fit the rims.

An idea of the advantage to be gained by the use of the tourist's own car can be gained from figures supplied by the Pierce agent. A touring car of the size of the Pierce Great Arrow 45-horsepower would cost in France a rental of $30 to $40 per day, even when taken by the month. In addition to this the customer must pay all road expenses: fuel, garage charges, tires, maintenance of chauffeur, and an average tip of $2 per day to the latter.

Progress of Brush Test

Chicago, Aug. 18—The efficiency test inaugurated August 1 by the Brush Runabout Co., of Detroit, is well on its way to completion. The company dispatched four runabouts and a package cart, some going east and others west, the object being to demonstrate the efficiency of the 7-horsepower single-cylinder rigs. The one headed for Boston has reached its destination safely, averaging better than 100 miles a day. It was driven by W. W. Price, with W. D. Benson as observer. The No. 4 Brush is now in Chicago, having arrived yesterday after a journey of 1,108 miles, touching Kalamazoo, South Bend, Fort Wayne, Indianapolis, Danville, Ill., Springfield and Peoria. It leaves tomorrow for Minneapolis by way of Milwaukee. D. F. McCoy is the driver and Fred Nash observer. Up to date No. 4's gasoline bill has amounted to $9.78. No. 5, the package cart, passed through Chicago a week ago.



H. D. Wilson, Who Looks After the Interests of the Packard in Paris

The Readers' Clearing House

EDITOR'S NOTE—In this department Motor Age answers free of charge questions regarding motor problems and invites a discussion of pertinent subjects. Correspondence is solicited from subscribers and others.

LIKES THE SMALL CAR

Chase, Kan.—Editor Motor Age—I am a new subscriber to your interesting publication and have been especially interested in the Readers' Clearing House. In reading of the ideal cars, I am particularly interested in J. J. Ide's car. I have noticed that it is a common practice among manufacturers to place the tonneau of their car back of the rear wheels, thus making the tonneau ride much harder than if placed in front or directly over. It also makes more room, but an excess of room is almost as undesirable as too little. I am a great admirer of the light touring car of 18 to 24-horsepower. In this section of the country with our ideal roads, we have power to go wherever desired and at a speed fast enough for safety and comfort. I felt like taking my hat off to the little fellows that made such a magnificent showing in the Glidden tour. It looked to me as if the small car had to carry the "extra weight" but they "made good," and at least have the satisfaction of being in a position of not having to challenge the winner.—Fred L. Willard.

GYMKHANA REGULATIONS

Cleveland, O.—Editor Motor Age—A few motorists in this city are discussing the holding of a gymkhana on the city streets during the coming fall and I would like Motor Age to give suggestions on rules for such a contest.—H. C.

The rules governing gymkhana admit of particular latitude and versatility. A suitable set which has considerable merit is as follows:

Section 1, Economy Test—Contestants must drive on high gear with foot off clutch pedal over six artificial bumps located transversely, or otherwise, of the road surface, and separated at short intervals. Contestant will hold wine glass full of wine in left hand and winner of section will be contestant having most wine in glass at finish of section. Brakes must not be used during this section. Wine glass is graduated and points lost according to amount of wine spilled.

Sec. 2, Motorists' Roulette—A large wheel, 10 feet in diameter, and placed on the right side of the course and carrying five horizontal pins will be revolved slowly. The contestant will be given five rings, 12 inches in diameter each, and while passing this wheel at a given distance from it, will be required to throw the rings separately with the object of hanging as many on the pins as possible. The pins will carry values, one, two, three, four and five, and failure to place a ring on each will result in penalization equal to the value of the pin.

Sec. 3, Circus Ring—A ring 2 feet in diameter will be suspended 5 feet above the heads of the contestants, and each contestant passing thereunder will be required to remove his cap when approaching the ring, throw it through the ring, catch it again without dropping from high gear, slipping the clutch or removing the brakes. Failure to throw the hat through, 3 points penalty; striking the ring and not putting the hat through, 4 points. Failure to catch cap going through ring or not, 5 points.

Sec. 4, the Lancers—Each contestant will be given an 8-foot lance, which must be held backhanded. Six rings of varying diameter will be suspended over the course, at irregular intervals and the contestant must spear each of the rings off its support, when traveling on high gear with foot off the clutch pedal and without applying brakes. The rings will have values of one, two, three, four, five and six, inversely, according to their diameter; each ring speared will give the contestant that number of merit marks and each missed will give demerit marks in inverse ratio. For example: Missing ring one will give six demerit marks because this is the biggest ring.

Sec. 5, Gentlemen's Favors—At a designated point, each contestant must stop the car and motor, alight from the car at the left side, remove his or her linen duster, crank the motor, have a bouquet pinned on by an appointed person, replace the duster, reënter the car and start. The contestant doing it in the shortest time receiving three merit marks; the next contestant, two merit marks; the next, one; the next, nothing; and the others one, two, three, four, etc., demerit marks in order of length of time required.

Sec. 6, Teeter Board—This event will consist in balancing the car on a teeter board 24 feet long, 6 feet wide, resting on an 18-inch fulcrum. Car will drive onto teeter board until forward end touches ground; then reverse until rear end touches ground; then go forward to balance, balancing 30 seconds, then driving off ahead. One point penalty for each second under thirty in which contestant failed to balance. Each contestant has 2 minutes from time front wheels rest on teeter board to do this section in. In this section driver must use own judgment as to gears used and slipping of clutch as well as use of brakes.

Sec. 7, Tea Meeting—At the right side of the course will be planted six stakes, car high, having miniature platforms 6 inches square on the top of each. On the first will be a box of chocolates; on the second, glasses of punch; the third, case of cigarettes; the fourth, matches; the fifth, toothpicks; and the sixth, a basket of lemons. Each contestant will be required to take one each from the chocolates, cigarettes, matches, toothpicks, lemons, and to take a taste of the punch, and replace it on the next platform. All must be done with the car running on the high gear, the foot off the clutch pedal and without the application of the brakes.

LOUGHEED'S MOTOR DESIGN

Chicago, Ill.—Editor Motor Age—I should like to know in Victor Lougheed's design of a gas engine, if that system would sufficiently cool by air without fins on the cylinder or fans? What should the bore and stroke be of each cylinder of a two-cylinder two-cycle in Lougheed's idea of an engine to develop 12 or 14-horsepower at 1,000 revolutions per minute? Does Motor Age think a red hot wire will ignite a variable fuel injection where the air is at all times the same as is the case with Lougheed's and others' ideas? How many pounds of compression would an engine of this shape have to have to make a variable fuel injection easiest to ignite?—Reader.

It is not possible for Motor Age to answer all of your questions positively, Mr. Lougheed's new engine not yet being on the market, though Motor Age is informed that experimental work with it is progressing very satisfactorily. It can see no reason why cooling should not be successfully accomplished by internal scavenging, if the volume of air passed through the cylinders be sufficiently great. And in the design in question it is possible to establish any desired relationship between the charge volume and the volume used for scavenging, so there would seem to be no difficulty to anticipate unless the engine should have to be unduly large for a given power output, because of the use of too much of the cylinder contents for scavenging. The bore and stroke of a single-cylinder, two-cycle, to develop 6 or 7-horsepower at 100 revolutions per minute, would depend altogether on the mean-effective pressure secured, which cannot be more than approximately determined without considerable experimenting. Moreover, there is every reason to suppose that one of the chief merits of this design of engine would be a capacity to deliver its maximum torque at considerably above 1,000 revolutions per minute, even with a fairly high piston speed. There is no doubt

whatever but that a wire sufficiently hot will ignite gasoline or gasoline vapor in association with air. Beyond the belief that the compression should be, as we understand Mr. Lougheed proposes to have it, pretty high, we have no data wherefrom to formulate an answer to your final question.

CORRECT HORSEPOWER FORMULA

Spokane, Wash.—Editor Motor Age—Please advise me as to the A. L. A. M. method of ascertaining the power of gasoline cars. Does the A. L. A. M. use the following formula:

$$\text{Horsepower} = \frac{D^2 \times N}{2.5}$$

This is the correct formulae. In it D is the cylinder diameter in inches; N is the number of cylinders, and 2.5 is a constant.

TIMING OF VALVES

Oxford, Ind.—Editor Motor Age—Will Motor Age through the Readers' Clearing House tell me what rule repairmen use in timing valves on motor car engines? Are they supposed to know the manufacturer's rule on all the different makes of cars? What is the trouble with a four-cylinder car that heats badly, which trouble experts and every one else have tried to locate and failed?—Reader.

Repairmen rarely know the timing on the valves of a great many of the engines which come under their attention. It is not customary for manufacturers to give to the public the system used in the timing of their valves. In many engines, however, the periphery of the flywheel has grooves cut in it to assist in the timing of them. This is done when one of these grooves comes beneath the pointer generally supported directly above the top of the flywheel. The valve to which this mark on the flywheel applies should begin to either rise from its seat or just begin seating when the mark is at the pointer. If the flywheel is not marked, to indicate the position of opening and closing the valves, the dead center of the engine must be found, which may be done by opening a petcock in the cylinder head and running a small-diameter wire through until its end rests upon the piston. In this way, when the wire is at its lowest and highest points, the crankshaft is at its dead center. The wire should be marked with a file at these points to facilitate the timing process. It will be found that the majority of the engines are not made with the valves opening and closing on the dead center, rather the intake often closes considerably after piston has reached the bottom stroke and is rising, the theory of this action being that the speed of the entering gases is so great that they continue entering after the piston starts on the up stroke. Then, again, exhaust valves frequently open before the end of the explosion stroke, and a few motors are made where they do not close until the suction stroke begins, there being a fraction of a revolution when the intake and exhaust valve of each cylinder are open at the same time. If you have reason to believe that the timing of your engine is out, write to the factory for information on the proper opening and closing of the intake and exhaust valves.

DOUBLING CYLINDER CHARGE

DeRidder, La.—Editor Motor Age—As a reader of Motor Age I would like to make an enquiry through the Readers' Clearing House columns. In a gasoline motor of any horsepower of the four-cycle type, if after the ordinary charge had been drawn in the cylinder, there could be forced in one and one-half or two more charges properly vaporized, without creating any more resistance on the motor, about how much would the horsepower be increased?—A. B.

If it were possible to force into a cylinder a couple of extra properly vaporized charges after the regular charge was drawn in the result would be the same as giving the engine too great a compression. The connecting rod bearings and other parts not being of sufficient strength to withstand it. If the regular charge were doubled and other conditions remained the same the horsepower would be doubled. And if as stated in the inquiry two additional properly vaporized charges were forced in the power would be three times as great. Motor Age fails to understand the meaning you attach to the word "resistance" and would like to know if you mean strain on the different parts of the motor.

MANUFACTURE TIRE FILLING

Bristol, Ill.—Editor Motor Age—Is there a preparation on the market for filling up small cuts on the outer casing of motor car tires, cuts not large enough to require vulcanizing but which should be covered up to keep out sand, gravel, etc.?—J. M. Boomer.

There are several preparations on the market for filling cuts in tire casings, which eliminate the necessity of vulcanizing. Two of these are C. O. Tingley & Co., Rahway, N. J., who manufactures the C. O. T. Gum Gum; and Greenwald Rubber Co., 34 Church St., Buffalo, N. Y., the makers of Fillem.

CHANGES THE GEAR RATIO

Astoria, Oregon—Editor Motor Age—Being a more or less close follower of "Readers' Clearing House" department of Motor Age will ask if you have not made a mistake in your answer to C. W. Maxwell regarding the effect of locking one sprocket of a side-chain drive machine? Now is it not a matter of fact that the main driving gear on the jackshaft is bolted to a ring that carries the pivots of the "spin gears"—balance bevels—and therefore, tends to pull just as hard on one chain as the other; but, if for any reason one of the chains is put out of commission, and that sprocket lashed solid, in order to drive by the other chain; doesn't the other sprocket revolve at twice the speed, in relation to the engine, as it did before, due to the fact that if one gear on its section of jackshaft is stationary necessitating the "spin gears" rotating on their own axes and, therefore, driving the other section of jackshaft at a two to one ratio regardless of the relative size existing between spin gears and jackshaft gears? I have been "up against" this very condition, and know positively when my car was geared one to four normally, and I had to limp home with only one chain, the gear ratio between engine and wheels was one to two. It is a matter very easily demonstrated with any such chain-drive car.—H. W. Cyrus.

Motor Age was in error in stating that the gear ratio remained the same when one of the sprocket chains was broken and the sprocket locked. If the gear ratio was four of the engine to one of the rear axle with both chains working it would be two of the motor to one at the rear wheels with only one chain in commission.

BUILDS TWO-CYCLE ENGINE

Pittsburg, Pa.—Editor Motor Age—Recently, through a receiver, I came in possession of a part of a 1-horsepower two-cycle engine, manufactured by a local concern, which has gone out of business, and after procuring the additional parts necessary, I found that the engine would not run. The designer manufactured only a part of it, and he claimed that it had all run very well, and attained high speed, something like 1,600 revolutions per minute. I am using a Lunkenheimer valve or carbureter and have experimented with both nitre-gas and gasoline, and find that the only place I can get an explosion is at the end of the working stroke when the exhaust port is entirely uncovered, and consequently obtain no force from the explosion. The exhaust port is on the under side of the engine—just horizontal. The fuel port is on the top, about the center of where the screen is on your engine. Instead of a screen there is a passageway over the top of the engine and the port permitting the passage of the fuel charge from the crankcase to the cylinder is uncovered about the time of the exhaust port and there is a deflector on the end of the piston. The cylinder is 2¾ inches in diameter, and the stroke of the piston is 2½ inches. The spark plug is on the head of the cylinder and at the end of the compression stroke the piston is only about ⅝ inch from the cylinder head, which is a little more than one-seventh of the compression stroke of the piston, and it has occurred to me that possibly this space is not sufficient. I have found that by moving the head of the cylinder ⅞ inch

further away I can make the engine run very nicely, but I am not certain yet that I have the right amount of compression. This makes the space between the piston and the head of the cylinder at the end of the compression stroke 1¼, while the stroke of the piston is 2½ inches. Since commenting on your remarks about using the reverse as a brake while the high-speed clutch is engaged in the planetary transmission, I have by experiment ascertained that the reverse works very satisfactorily as a brake while the high-speed is engaged, but I prefer to use it as a brake while the clutch is disengaged.—P. L. Pettes.

As to whether you have sufficient compression or not, the best criterion is the amount of power generated by the engine. With too low a compression there will be a perceptible loss of power. One and one-fourth inch between the piston head and the top of the cylinder is too much in a motor with a stroke of but 2½ inches.

OHIO ROAD ROUTES

Columbus, Ohio—Editor Motor Age—Will Motor Age give me the most direct touring route from Detroit to Columbus, Ohio, and from Columbus, O., to Chicago, naming the important towns on the two routes?—S. D. Brown.

The best route from Columbus to Chicago is from Columbus by way of Dayton to Indianapolis, Indianapolis north through Kokomo, Richmond and Peru to South Bend; South Bend west through Michigan City, Chestertown, Hobart, South Chicago to Chicago. The best route from Columbus to Detroit is as follows: From Columbus through Clintonville, Worthington, Delaware, Marion, Upper Sandusky, Van Buren, Bowling Green, South Toledo, Toledo, and thence on the regular Toledo-Detroit route.

GAS ENGINE PERFECTION

Detroit, Mich.—Editor Motor Age—There is no question but that there will be considerable improvement as time goes on in all types of motor cars. The gasoline driven machine will be no exception. There will be, from year to year, betterments and improvements in many details. Our knowledge of the gas engine is still far from perfect. The steam engine we have had with us for the better part of a century and yet one can scarcely pick up an engineering journal without reading of some experiment or test which has developed new knowledge upon the subject. It is not reasonable to suppose, therefore, that the gas engine can, within 10 years, become a perfect mechanism. Unfortunately, also up to the present time men who have been most thoroughly acquainted with gas engine construction operation have been so busy along manufacturing lines as to be unable to devote much of their time and energy to the development of the finer points of the art. The well-designed gas engine has reached a stage which we may term "commercial perfection," and we should use even this term advisedly and with reservation. The next few years will unquestionably see marked improvements both in the internal combustion motor itself and in its various accessories.—H. E. Coffin.

MAKE PASSENGER BUSES

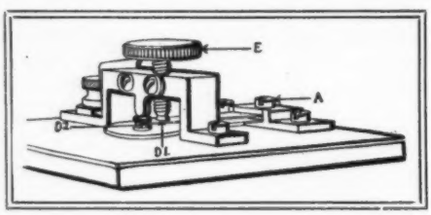
Calumet, Mich.—Kindly put me in touch with the manufacturers of twelve to twenty-five passenger motor vehicles similar to those made by the Rapid Co., of Pontiac, Mich.—C. E. L. Thomas.

Some of the manufacturers of passenger vehicles of the class referred to are: Auto Car Equipment Co., Buffalo, N. Y.; Oscar Lear Auto Co., Springfield, Ohio; Grabowsky Power Wagon Co., Detroit, Mich., and Mack Bros. Motor Car Co., Allentown, Pa.

ADJUSTING A NATIONAL COIL

Grand Island, Neb.—Editor Motor Age—Will you answer through the columns of the Reader's Clearing House the following: How can the vibrator of a coil be adjusted as well as possible by an ordinary driver, and when does it consume more current at a high or a coarse buzz? Is it advisable to oil the springs of a motor car?—A. J. Windolph.

In adjusting the vibrator of a national coil the space between the spring D and D2 in the illustration should be about



the thickness of D1 at the end where they strike. You will observe that the spring D1 moves in a narrow slot on the top of D2. Should it be necessary to remove the vibrator entirely give the screw A2 one turn after which the vibrator may be taken out. It is a good plan to oil springs, particularly when the car is used on rough roads. In long tours this is done regularly. It makes the spring look somewhat dirty, but otherwise works no inconvenience. The degree of buzz in a coil vibrator is a poor indication of the amount of current being used, the higher tone indicating a stronger current.

FOUR-CYLINDER GIVES MOST POWER

Chase, Kan.—Editor Motor Age—In a discussion among owners and prospective owners of motor cars, the question of gasoline consumption came up and by mutual consent it was agreed to refer the matter to Motor Age. Which will take more gasoline, a one, two or four-cylinder engine, the square inches of piston surface being equal?—F. L. Willard.

In answering your question as to which is the most economical a one-cylinder, a two-cylinder or a four-cylinder mortor with the same total piston area one example will suffice to illustrate the point in question. Supposing 20 horsepower is necessary to do the work. A single-cylinder engine with a 7-inch bore will be needed, a two-cylinder engine with a 5-inch bore and a four-cylinder engine with a 3½-inch bore. If the stroke or piston travel in all of these engines bears the same relation to the diameter, or bore, then more fuel will be required for the single-cylinder than for the two-cylinder. Engineers have discovered that there is an economic limit to the size of engines, and when large sizes are used the economy of fuel is lessened due to radiation of heat units and mixture conditions. In all probability the four-cylinder motor with 3½-inch bore which would give 20 horsepower would give better economic results than the two, although this would be largely a matter of design, as the cylinder size in both is practically within the reasonable limit. Economy tests conducted in many parts of the country have invariably shown the small four-cylinder motor to be more economical than the two-cylinder type giving the same horsepower. The horsepower generated by motors is very largely a matter of design, as well as adjustment of the motor accessories, and in arriving at an accurate result all of these would have to be considered. It is safe to assume though that in ordinary conditions the four-cylinder is more economical than the two, and the two more economical than the one.

TIRE FILLERS WANTED

Manchester, Iowa—Would it be possible for you to advise me regarding the merits of Newmastic, Ruberine and Elastic filling for tires? The above concerns are in Chicago. My car is a Ford model R, and while tires have given fine service they are getting well worn and will soon have to be replaced. I hardlly ever speed 12 miles per hour on the country roads. Would any of the above fillings be practical? That is for slow travelers like myself.—Wm. E. Sepley.

Motor Age has observed and followed cars fitted with tires filled with various preparations for many miles during which the fillings have shown themselves to be of merit. On the 1907 Glidden, one of the Royal Tourist cars was fitted with tires filled with Newmastic and they performed most favorably. The car was able to make speed and the vibration was very little above the normal with the car traveling at 35 or 40 miles an hour. All fillings of this nature should be used in casings that are not badly worn, it being a mistake to imagine that any worn out casings can be filled with these preparations and good service obtained. With your car, as you say rarely exceeds 12 miles per hour, these fillings should be perfectly practical if the casings are reasonably good.

Motor Car Shop Kinks

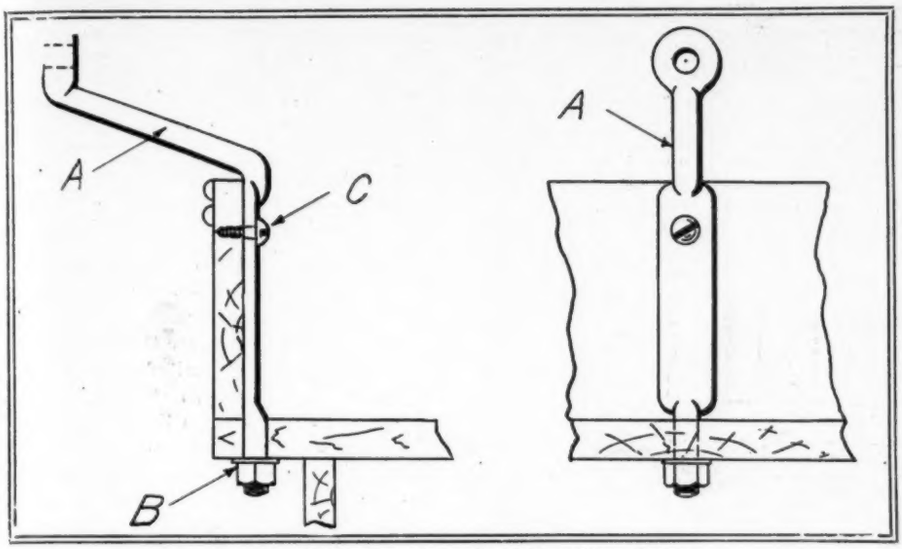


FIG. 1—ATTACHING CAPE CART TOP HOOD IRONS

GROUNDING CONTACTS

In a make-and-break igniter the grounded electrode is the rocking stem and finger. This stem is lubricated by what oil may chance to pass it from the combustion chamber. Usually this oil is sufficient for lubrication, and it may be so abundant as to interfere with the flow of current. It is not uncommon to see sparks jumping from this electrode to adjacent parts when the motor is running fast. In case misfiring is noted, and the insulation of the lava bushings is known to be good, a light coil spring may be connected between the rocking stem and any adjacent grounded part, such as one of the studs holding the igniter plate. This spring should not be stiff enough to interfere with the make-and-break movement. Soft copper wire is the best material for it, and one end of the wire may be soldered to a copper "battery terminal" held by the stud nut.

RENEWING CLUTCH LEATHER

The leather of the ordinary cone clutch by degrees acquires a sort of coarse surface glaze, which may or may not represent actual charring of the leather, but is certainly due to the slipping it experiences. A leather with its surface so glazed has a very harsh action, since the surface is so hard that it grips all at once. The glazed surface will not absorb oil to any appreciable extent, a fact which is easily seen on attempting to dent the surface with a thumb nail after giving the oil time to soak in. In this condition the best thing to do is to put on a new leather. Unless the angle of the cone is too abrupt, a piece of ordinary belting will serve the purpose, provided it is of uniform thickness throughout. The belting may be soaked in neatsfoot oil over night before applying, and this will render it pliable enough to take the shape of the cone. If the old leather is retained in service it becomes almost essential to squirt a little oil on it every day or 2, as otherwise it may take hold with such a jerk as to endanger the transmission shafts. If the cone releases by drawing backward, there are probably openings in the web of the cone through which the spout of a squirt can may enter. Oil squirted into the flywheel interior will then quickly find its way to the clutch surface. Sooner or later, however, the leather will become glazed so smooth that it will not hold at all, and it is liable then to slip and burn up without warning.

ANCHORING HOOD IRONS

In a former issue were given sketches showing how to anchor a Cape cart hood iron in case the original fastenings proved insecure. The method shown could be carried out without a blacksmith's aid and with only ordinary tools. If, however, the job can be sent to a blacksmith or to a carriage shop, a much more substantial repair can be made, as shown in the accompanying illustrations.

In Fig. 1, A is the iron, and B shows the original form of the lower end. The fault of this design is that there is not sufficient hold against the purchase of the overhanging upper end, in case the overhang amounts to several inches, as it sometimes does. In addition, the screw C, which does not go clear through the side of the seat, is too small to serve as a fulcrum. To correct this defect, the first thing to be done is to put a carriage bolt, D, right through the side of the seat, having its head outside, as Fig. 2 shows. To oppose the purchase of the upper end, the lower end must be cut off and a piece welded on it and shaped to act as a lever. It would be possible to have this piece extend horizontally inward over the wood seat. This, however, might possibly interfere with taking out the gasoline tank, and in that case the extension E can be shaped as a flat inverted T. The ends of this T are drilled for bolts to pass down through the overhanging part of the wood seat. The T so formed does not need to be more than $\frac{1}{8}$ or $\frac{3}{16}$ of an inch thick, and if the edges are beveled off it will not chafe the bottom of the cushion. In a particular case the charge made by a wagon shop for this repair was $3.50 for two front irons. Irons of this nature give a rigid support and do not strain the seat framework.

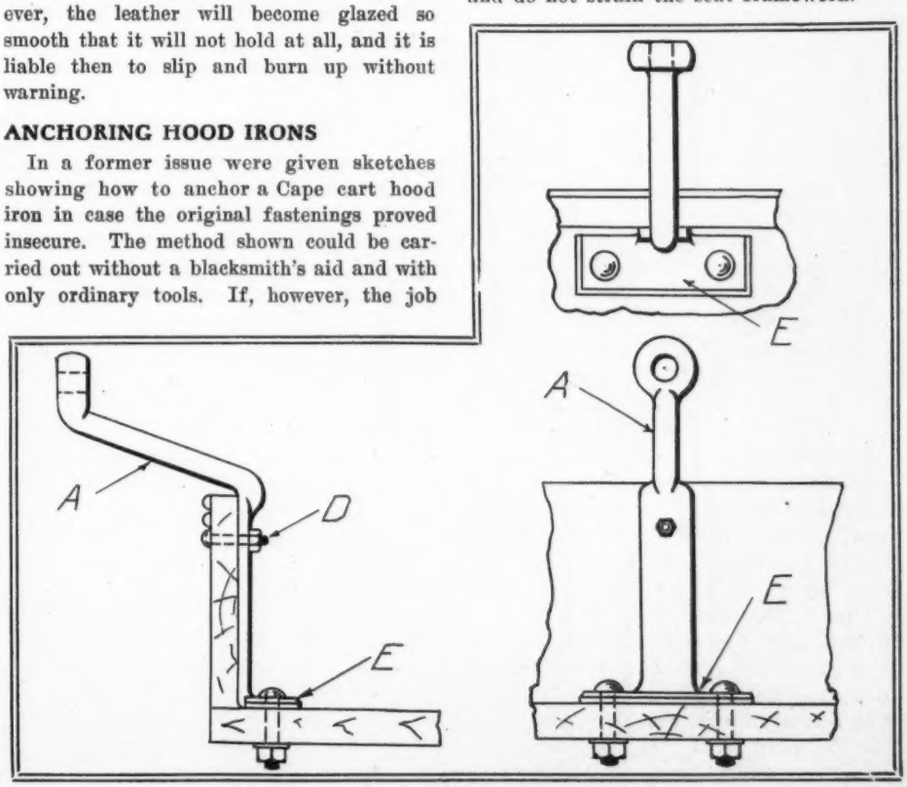


FIG. 2—ATTACHING CAPE CART TOP HOOD IRONS

From the Four Winds

N S E W

CHALMERS-DETROIT FORTY AMONG THE CLIFF DWELLERS

Cliff Dwellers Interested—A photograph of a Chalmers-Detroit Forty car was taken recently in front of the cliff dwellers' ruins at Manitou, Col. The car was driven by Louis E. Eckert, of Denver.

Big Rambler Signs—Recently two large sign boards have been erected by the Rambler people, one south and the other north of the city of Kenosha on the line of the Northwestern railroad Each sign is 66 feet in length, 20 feet high and constructed of sheet steel. Each bears the message, "Kenosha—Home of Rambler Automobiles — The Largest Automobile Factory in the World."

Babcock Electric's Feat—The Babcock electric has established two new records in Milwaukee. In one was a non-stop run of 113 miles on one charge. The next day the same machine reeled off 91 miles over the worst possible roads in the lake region of southeastern Wisconsin on one charge, without the slightest mishap. This is the same machine that ran from Chicago to Milwaukee, 87 miles, on one charge, in little more than 8 hours, a week ago. The Babcock's greatest run on one charge previously was that in Minneapolis, when it made 107 miles.

Winton's Chauffeur Contest—The second annual $2,500 cash prize contest for Winton six chauffeurs will start November 1, 1908, and end June 30, 1909. Any employed driver of a Winton six, whether of 1908 or 1909 production, is eligible to compete. There are no entry fees of any kind. The contest is aimed to produce service records of these cars in the hands of individual owners, and, in general, follows the plan of the 1907-8 contest, in which Frank Schneider, of New York, won $1,000 for driving Milton Schnaier's car 11,683 miles on an expense of $12 for repairs. In the second contest the winner will get $1,000, second $500, third $250, fourth $150, fifth to tenth $100 each.

Sheboygan Remembers—Owners at Sheboygan, Wis., will give the orphans and poor children a tour some time in September, following the example of the Milwaukee A. C.

Watches for Drivers—As an indication of its appreciation, the Studebaker company is presenting to each of the drivers who assisted in taking the army dispatch car from New York city to Fort Leavenworth, Kan., a solid gold watch.

Uncle Sam Interested—Road-making experiments in Massachusetts continue to attract attention and next week officials from the United States government will investigate some of the roads being built in Newton, Mass., under the direction of Street Commissioner Ross. The highway commission is trying a new plan down along the south shore and toward Cape Cod. This section of the state is made up of sand washed in by the Atlantic ocean for many years and heretofore it has made poor roads for any kind of traffic. There are no rocks thereabouts to be crushed into the roads. So the highway commission is now at work on a new scheme. A heavy grade of crude oil, containing a large percentage of asphalt is being used with the sand. The sand is first being shaped with a road machine and heated oil is then spread over the surface. In a few weeks second coating of oil will be used. A disk harrow will then cut up the surface so as to mix the sand and oil to a depth of 4 inches. The final work will comprise rolling the road and sprinkling the surface with a thin layer of sand to absorb the oil. Much interest is being taken in the experiment, the first of its kind in the state.

Bargain Sale of Tags—City Controller George Breunig, Indianapolis, is having a bargain sale on city licenses for the remainder of the year. The regular price is $3 a year but Breunig offers a license for the remainder of 1908 for $1.50.

Oldfield Disappoints Crowd—Considerable excitement and no little amusement was created by the announcement that Barney Oldfield would race the Lake Shore Twentieth Century Limited from Mishawaka to Elkhart, Ind., last Friday afternoon. Motor car owners lined the course for miles and expected to see Oldfield make the race of his life. They waited several hours, during which Oldfield's racer was in a garage at Elkhart.

First Over New Bridge—The motor car had the honor of being the first vehicle to pass over the 2,000-foot Sixth street-First avenue viaduct in Milwaukee. Public Debt Commissioner J. B. Whitnall took Commissioner of Public Works J. P. Sherer over the mammoth viaduct in his big car to show him how much more debt the city of Milwaukee had incurred by constructing the connecting link between the south and west sides. It was a precarious ride, for the flooring was incomplete.

Hay Dealers Alarmed—There was considerable excitement a week or so ago at the Put-in-Bay meeting of the National Hay Association over the advent of the motor car and its effect on the hay market. Ex-President H. C. Morgan, of Pittsburg, a prominent hay dealer, warned his fellow members that the market for low grade hay was disappearing with the advent of the motor car. He stated that city people are using motor cars largely in place of the former horse and buggy. Mr. Morgan stated that the market for high priced hay is improving but said that a new market must be found for cheap hay.

Ohio's Big Registration—In the first 2 months in the operation of the Ohio law 8,260 cars were registered by their owners. This is not more than one-third of the total number in the state according to the best estimate. A large number owned in cities had already paid an annual license fee prior to the operation of the state law and were therefore exempt this year. Next year, however, they will come within the provisions of the law. The receipts for the second month were $17,264, all of which went into the pay treasury for good roads. The expenses of the department for the entire year were taken out of the first month's collections.

News from the Motor Clubs

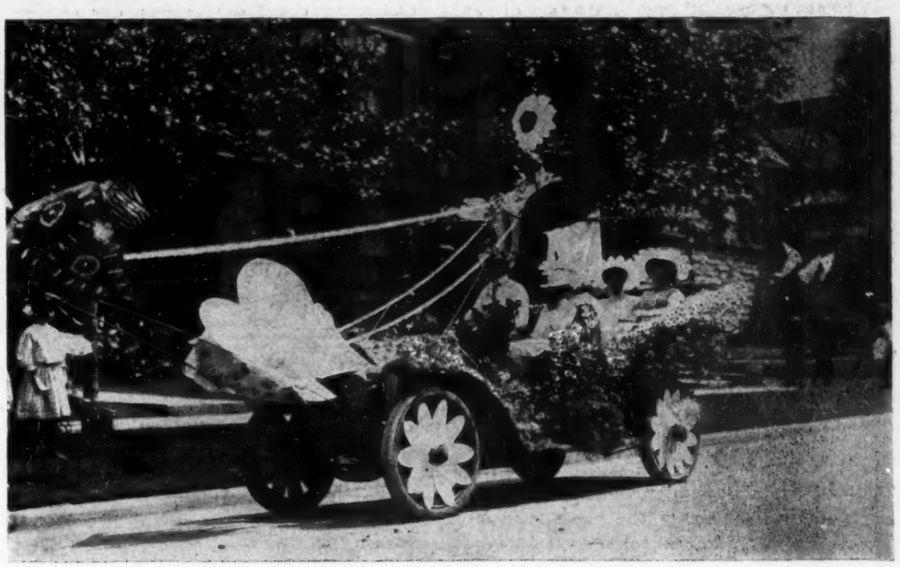
Worcester Calls Off Climb—The Worcester Automobile Club has decided after all that it will not run a hill-climb this fall. The club sent out a lot of letters to people that participated in the last climb asking their opinions on the advisability of running another, but did not get enough favorable answers to warrant running it over again.

Parade at Muskegon—One of the big features of the homecoming day at Muskegon, Mich., was the parade of decorated motor cars. The car of William W. Butterfield carried off first honors. The machine was decorated with flowers with two large butterflies attached in front. On an elevation in the tonneau sat a small girl dressed in white to represent a goddess, making an attractive picture.

Badgers to Meet—The annual meeting of the Wisconsin State A. A. will be held in Milwaukee on Wednesday, September 9. This brings the meeting during the Wisconsin state fair, which generally attracts hundreds of owners from every part of the state and makes possible a full attendance of members of the W. S. A. A. It is believed Neal Brown will be re-elected president, and James T. Drought secretary and treasurer. Nominations have already been mailed. The M. A. C. is arranging a big program of entertainment for the visitors.

Booming Membership—The Minneapolis Automobile Club is celebrating the completion of its new country clubhouse by inaugurating a campaign for additional membership. The initiation fee has been remitted for the time previous to the formal opening of the clubhouse, and applications are coming in in scores. The club has had a membership of over 700, and has enjoyed the reputation of being one of the largest and most active clubs in the country. The completion of its country clubhouse will probably boost the membership well toward the thousand mark in the state.

Blazing a Trail—The Minneapolis Tribune trail blazer, a stock 30-horsepower Wolfe car, left Minneapolis Monday morning on an expedition to Grand Forks, N. D., on an 800-mile endurance and trial-marking trip. The expedition carries with it a representative of the Minneapolis Automobile Club, and specific information will be gathered of roads and road conditions, for use in the 1909 road book of the Minnesota State Automobile Association. The 407-mile trip to Grand Forks will be a race against time, and the return trip will be devoted to a leisurely gathering of statistics. Information as to all resorts along the line of the tour will be gathered by the representative of the Minneapolis Automobile Club.



PRIZE-WINNING CAR IN PARADE AT MUSKEGON, MICH.

Club Oiling Roads—The Mercer County Automobile Club, of Trenton, N. J., is furnishing and applying oil to some of the country roads, as an experiment in abating the dust nuisance with a hope that it will be adopted by the state in all road construction. This movement will preserve the farmers' crops from injury by the dust which settles, and incidentally blinds the motorist who is in the wake of another car. This is also a movement in the right direction to secure better legislation.

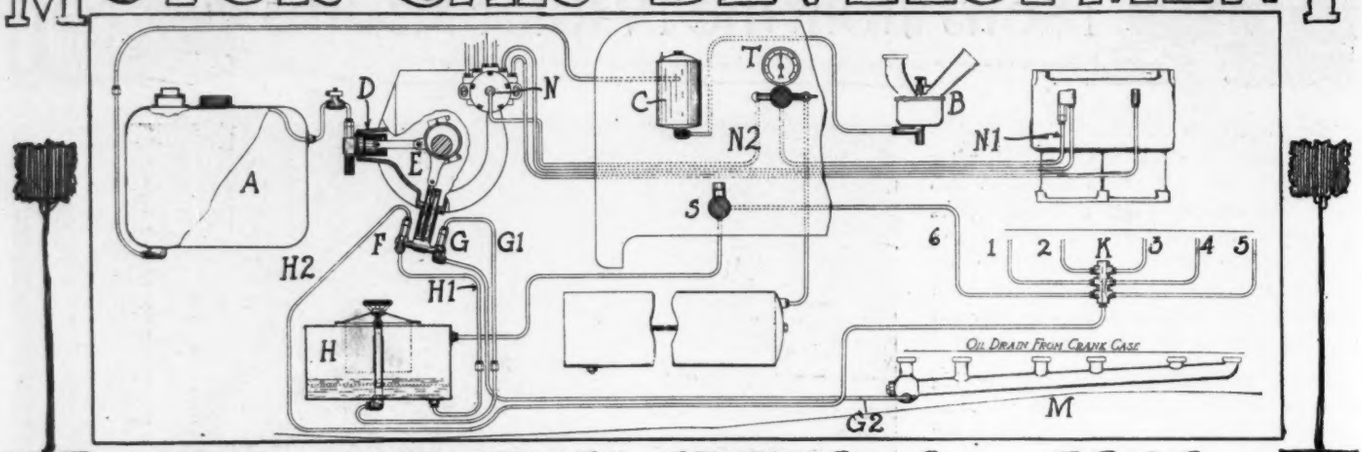
Club in Small Town—A motor club has been organized at Big Rapids, Mich., with a membership of twenty-seven and it is planned to ask the owners of neighboring towns which are too small to support clubs of their own to join this one. The club was formally launched at a dinner at which the following officers were elected: President, Dr. T. W. Dodge; vice president, George W. Fairman; secretary, H. J. Ward; treasurer, Dr. A. W. Ball. The board of directors is composed of George W. Wright, F. H. Lang and C. P. Judson.

Cleveland Reliability — Swinging into line with other large cities, Cleveland is to have a reliability run this fall. This much has already been settled by the Cleveland Automobile Club, the board of trustees of which will shortly appoint a committee to look after the event. The Chicago rules, modified, will be used for the local event. The dealers and one of the morning newspapers have been after the club for some time to promote such an event, and plenty of entries are practically assured. The large majority of the dealers have signified their intention of competing. Promises have been obtained from the representatives of such cars as the Stoddard-Dayton, Pierce, Knox, Reo, Cartercar, Gaeth, Regal, Chalmers-Detroit and many others. All that remains now is for the committee to push the work through.

After Club Garage—The Rhode Island A. C. is taking steps toward securing a club garage. President W. Penn Mather, Treasurer James Smith and Secretary Frank M. Barber have been appointed a committee to look into the matter and see if there is any site available for such a purpose. The members of the club have been talking the matter over for some months. The success of the club garage operated by the Massachusetts A. C. in Boston has been pointed out as a model that might well be followed in Providence and the committee is expected to make an early report along this particular line.

Want Roads Treated—The Toledo Automobile Club and public spirited citizens have renewed their efforts to have the county commissioners exercise the authority vested in them by the state for the construction of several sections of oiled roadway, each section to be treated by a different process. A recent test made on the Toledo-Maumee road by the club using Toledo crude oil has not proven entirely satisfactory and a further test is planned to be made with oil from the Kentucky fields. Present plans are to have the various grades of crude oil in this territory tried out on the country roads so that the merits of the different treatments may be ascertained. The commissioners have thus far taken no formal action.

MOTOR CAR DEVELOPMENT



TWO WINTON SIXES for 1909

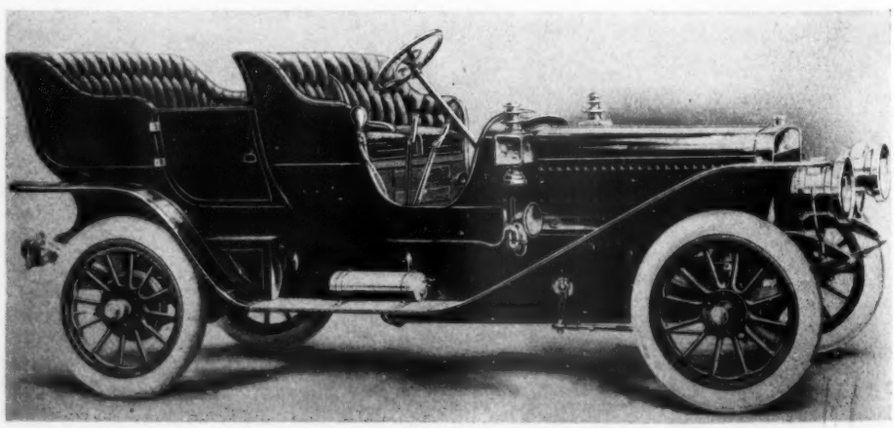
DIAGRAM OF THE GASOLINE, OIL AND SELF-STARTING SYSTEMS IN 1909 WINTON SIXES

FROM one six-cylinder model in 1908 to two in 1909 shows the spirit of confidence the Winton Motor Carriage Co., Cleveland, O., has in six-cylinder construction. Its two sixes are rated respectively at 48.6 and 60, the former being a continuation of the present Sixteen-Six and the 60-horsepower a new machine built on the same lines. In both cars are continued the many Winton characteristics, such as offset cylinders, cast and in pairs, with the valves on one side; double ignition scheme, multiple-disk clutch carried in a forward compartment of the gearbox; selective three-speed transmission with direct drive on the third speed and propeller-shaft drive to a floating rear axle. Timken bearings are used for the front wheels as well as the rear axle. The use of a manganese bronze front axle is continued; and internal and external brakes applied through equalizers are carried on the rear wheels.

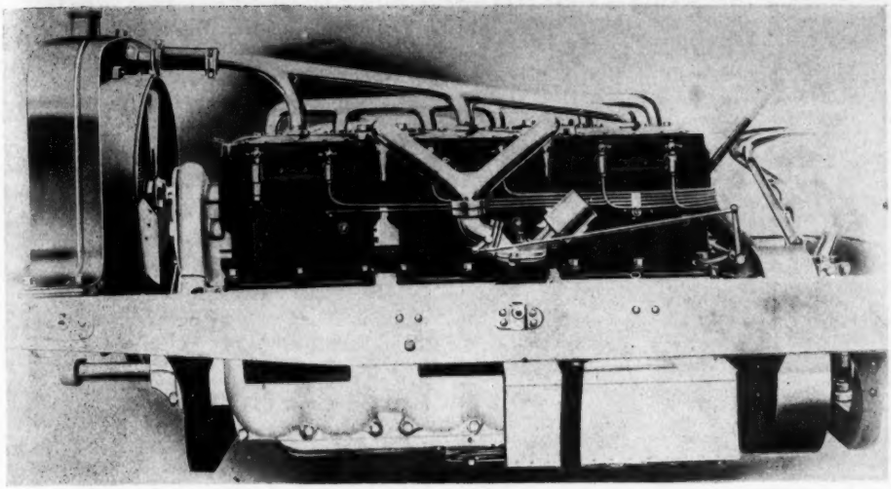
One of the conspicuous improvements is the lubricating system which is explained diagramatically on this page. At the rear of the motor and driven by an eccentric E from the rear end of a motor shaft are two oil pumps F and G. The pump F takes oil from the reservoir H, carried at the left side of the motor, and delivers it through a lead H2 to a distributer K, whence it passes to the four bearings of the crankshaft designated 1, 2, 3, 4, and to the half-time gearcase 5. Another lead 6 passes to the sight-feed S. The oil, after passing through the motor bearings, is drained from the crankcase by a piping M and is pumped through the lead G2 by the pump G and returned to the oil reservoir H. Using the two pumps F and G, one forcing the oil to the bearing and the other returning it from the crankcase, gives a complete forced circulation, the oil being filtered on each circuit.

In the same diagram is shown the gasoline system used in both Winton sixes. The gasoline tank A, placed beneath the chassis at the rear, carries 2 pounds air-pressure maintained by an air-pump D driven from the motor. This pressure is sufficient to force the gasoline to a gravity tank C on the dash, whence it flows by gravity to the carbureter B. Closely associated with this gasoline system in the diagram is the compressed air self-starter, in which the products of combustion from one of the cylinders are conveyed through a pipe N to a reservoir carried on the chassis. From this reservoir these gases pass through a gauge T on the dash and thence through pipe N2 to a rotary distributer N, which has six pipes leading to the cylinders. The pressure stored in the reservoir is released by means of a press button and the gas by means of the distributer delivered to the proper cylinder, the pressure being sufficient to force down the piston in this cylinder, at the same time bringing one of the cylinders past the firing point, the motor thereupon being driven by its own explosion. Should the first cylinder fail to fire for any reason, the pressure is delivered by the distributer to the cylinder next in order, forcing the next piston past the firing point, and so on, if necessary, through a series of cylinders. On the dash the gauge shows the amount of pressure stored in the reservoir and a shut-off valve is provided to prevent the escape of pressure to the storage tank when the car is to remain idle for a long time.

The motor in the 48.6 horsepower car uses cylinders of 4½-inch bore and 5-inch stroke. Each twin casting is ground to a mirror finish and given a hydraulic test of 300 pounds to the square inch. The crankcase, built in right and left halves with a vertical dividing plane, is a conspicuous Winton feature and is made with one half removable, the four crankshaft bearings being carried on the other half. Offsetting the cylinders and using long connecting rods is claimed to decrease wear and friction, and both are used for the third season. In balancing the motor parts the piston rings, connecting rod and wrist pin for each cylinder are all weighed and each group for each cylinder is the same weight. The crankshaft, made of specially treated nickel steel with a tensile strength of 125,000 pounds to the square inch, is carried on four bearings. Access to the motor interior is through



THE 48.6-HORSEPOWER, SIX-CYLINDER WINTON FOR 1909



CARBURETER SIDE OF THE 1909 SIX-CYLINDER WINTON

5 by 8-inch hand holes in the side of the case. The camshaft is removable through the front end of the crankcase without removing the valve adjustments, the valve springs, the push rods or the rollers. All motor gears are enclosed and those operating the camshaft, magneto and fan are of steel cut spirally.

The Winton carbureter, a development of the last 2 or 3 years, has two nozzles and two throttles; the throttles designed to operate progressively, the smaller opening first and later automatically opening the larger one. This carbureter is designed on the venturi tube principle, the air intake pipe and the pipe to the motor being one V-shaped pipe, the angle of which is enclosed in the top of the float chamber of the carbureter. In the angular elbow of the pipe are the two nozzles side by side, their level being such with reference to the float chamber that they are located in the center of miniature gasoline basins over which the air passing through the cylinders must travel. The smaller nozzle and the smaller throttle are used first as already indicated, the control for the throttles being from the steering column, or button in the foot-board.

The ignition system, a dual one, includes an Eisemann high-tension magneto carrying a distributer as one set and storage batteries with single non-vibrating coil at the other set. The battery is used for starting purposes only. Spark plugs are located horizontally over the intake valves.

Cooling of the motor is through a conventional water circulation made positive by the gear-driven centrifugal pump, which takes the water from the base of the vertical-tube radiator. Each time before the water passes through the pump it is filtered, a precaution taken to avoid clogging the radiator or depositing scale on the waterjacket. Should the pump become deranged, the system is such that the water would continue to circulate by thermo-syphon power. The radiator fan is gear-driven and couples to its shaft through a friction clutch in order to avoid sudden jerking when starting.

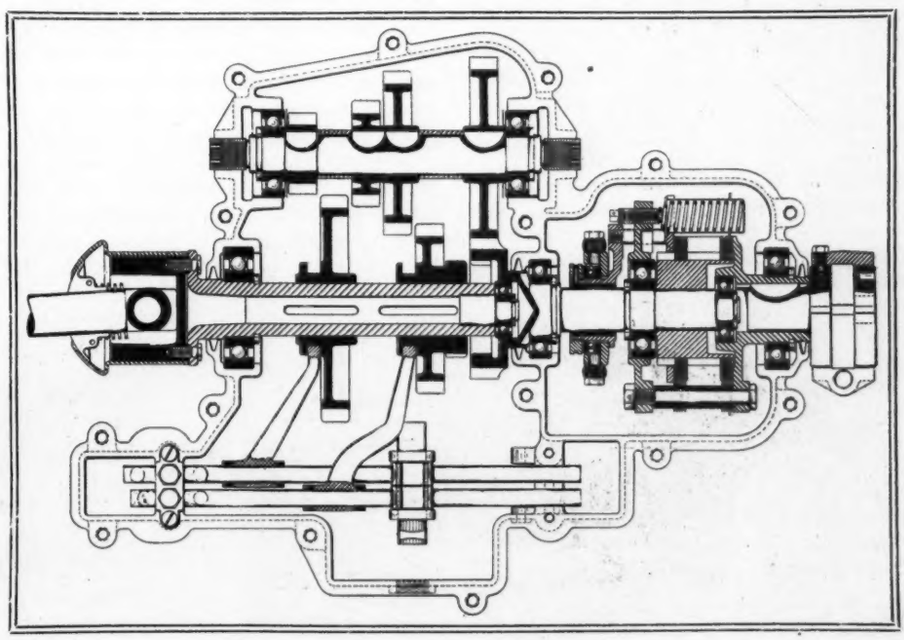
In the multiple-disk clutch are sixty-seven disks, thirty-four of which connect with the flywheel and thirty-three with the transmission shaft; six small springs, regularly distributed, are used for engagement. The disks revolve in an oil bath. The selective gearset is conventional, using three forward variations with direct drive on the third obtained by meshing internal and external gears. Specially hardened alloy steel is used in the gears, all of which are ground to fit. An interlocking system, preventing the meshing of two sets of gears at the same time, is used. The main and countershaft are carried on annular ball bearing; the two shifter rods repose in an oil-tight department at the side of the case and the gearset together with the motor is carried on a subframe. In the drive shaft is used a new type of universal joint enclosed in a grease-tight metal case provided with a plug for replenishing the grease. The joint is of the roller type. Between the motor and transmission is an improved flexible coupling consisting of a split housing, which engages the square end of the transmission mainshaft, and a similar steel square bolted to the flywheel. Driving strain between the rear axle housing and the frame is taken through radius rods, one at each side, which extend from the spring seating to brackets on the side frame numbers, these rods being pivoted at each end. Extending from the rear axle casing to a cross member of the frame is a torsion rod for relieving the driveshaft of strain caused by the tendency of the axle casing to rotate around the axle-shaft.

The front axle made from Parson's manganese bronze is without weld, and has integral spring seatings so formed that one clip passing through the axle bed secures each spring to the axle. The axle ends are of the Lemoine pattern and carry front wheel pivots provided with Timken roller bearings for the wheels. The steering links are adjustable; all joints of the steering connections consist of a heavy bolt with bushing secured by a nut and cotter pin; and the steering lever and gear are held in place by a taper pin.

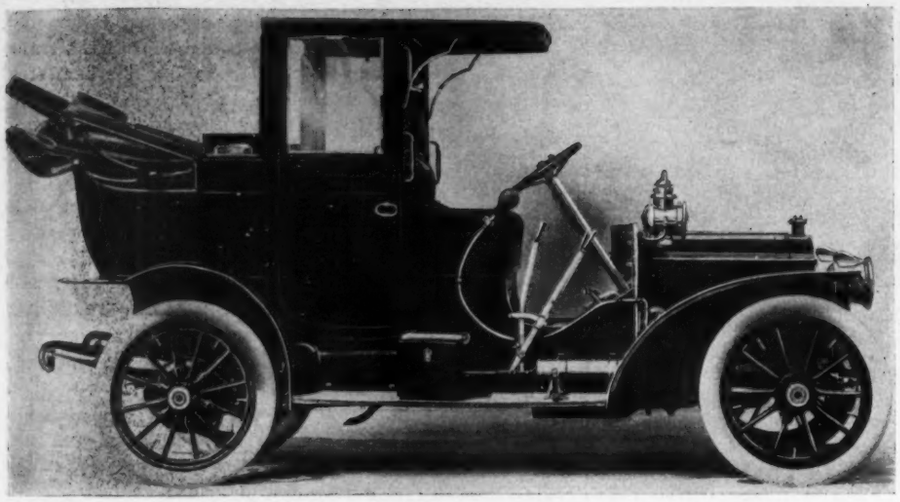
Springs are of the Winton twin type of the double semi-elliptical pattern. Each spring has two upper leaves intended to resist shocks and rebound. The wheels are 34 inches diameter and carry 4½-inch Goodrich quick detachable tires. The wheelbase is 120 inches, and the body made entirely of wood.

PACKARD TOWN CAR

The small car fever which struck America 1 year ago and which has been spreading ever since embraces the big as well as the small builder and one of the latest additions to its ranks is the Packard Motor Car Co., Detroit, Mich., which has brought out a town car rated by the factory at 18 horsepower, it hav-



WINTON 1909 SELECTIVE GEARSET HAS THREE FORWARD SPEEDS



PACKARD EIGHTEEN IN LANDAULET STYLE FOR CITY USE

ing four cylinders with 4 1/16-inch bore and 5⅛-inch stroke. According to the A. L. A. M. formula the rating is 26.4 horsepower. This Packard Eighteen, as it has been christened at the factory, is a smaller size of the present Packard Thirty, having the motor, transmission and running gear design identical with that of the big car. It is built in open car, limousine, landaulet and runabout styles, the three first styles built on the standard chassis.

The motor with its cylinders in pairs and opposite valves uses cylinder castings, pistons, piston rings and exhaust manifolds made in France from a special grade of gray iron. The ignition outfit is a dual system, the components of which are a low-tension Eisemann magneto with single-unit coil on the dash and distributor contained within the magneto; and a battery system with four-unit coil and commutater on the engine. Lubrication is by plunger pumps driven off the camshaft, one of the pumps forcing oil to the forward crankcase compartment, the other to the rear compartment, the supply of oil for each being drawn from a vertical cylindrical tank located between the twin cylinder casings on the exhaust side. Quick adjustments for the length of pump stroke are furnished. The oil passes through sight gauges on the dash, and occupies an independent level in each crankcase compartment.

The carbureter is a Packard one of standard lines incorporating within it the hydraulic governor in which the throttle is automatically cared for by a diaphragm, which diaphragm is worked by water pressure in the regular water system. The water is forced by the pump pressure against one side of the diaphragm and the other side of the diaphragm has connections with the throttle. The faster the engine runs the faster the water flows and the greater is the pressure upon the diaphragm, which is by connections translated into throttle control. Regular throttle control is carried on the steering wheel.

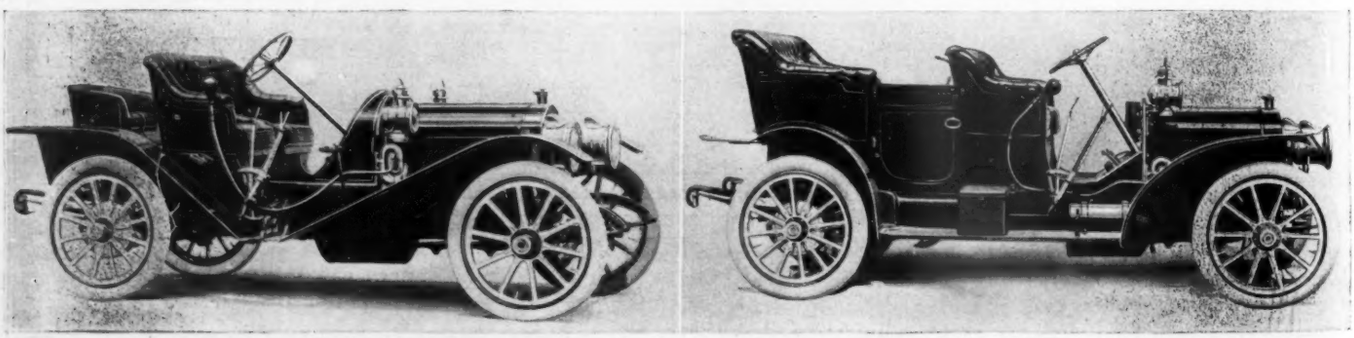
The transmission components, including the expanding clutch, progressive speed changing set incorporated on the rear axle and the rear axle itself, do not deviate in any regard from the Packard Thirty lines. The gearset affords three forward variations a d the reverse is obtained by the lever, which gives the three forward variations. All four brakes act on the rear wheel drums; the contracting set operated by pedal for regular use, the internal set lever-applied for emergency cases solely. Dust is precluded from the internal set because of the presence of a metal disk covering the open face of the drum.

The running gear components include a regular set of four semi-elliptical springs 40 and 50 inches in length in front and rear respectively, tubular front axle, 112-inch wheelbase, 56½-inch tread, and 34 by 4-inch tires in front and rear. In the runabout model the wheelbase is limited to 102 inches and the motor and driver's seat are carried further to the rear in order to distribute the weight fairly equally between the axles. On this model the steering column has more rake, the seat is placed lower and 3½-inch tires are used on the front wheels. The gasoline tank is located on the rear of the chassis and fuel fed by pressure to the carbureter. The bodies for the open car, limousine, landaulet and runabout are made of sheet aluminum panels over a wood frame work. The gasoline capacity is 18 gallons, water 4½ and oil 2½ quarts.

MOTOR CAR LITERATURE

The White Route Book No. 7 just issued covers the main touring route between Chicago and Niagara Falls both ways; Harrisburg to Cleveland, and Pittsburg to Washington. Each route is numbered, beginning with Chicago to South Bend, which is fifty-five, and ending with Washington to Pittsburg, seventy-one. Much local assistance and value is added to the book in that each day's journey in one direction is immediately followed by the directions over the same road in the opposite direction. An example of this is the first two routes, the first being the Chicago-South Bend route and the second the South Bend-Chicago route. The route stages between Chicago and Niagara Falls are: Chicago-South Bend; South Bend-Toledo; Toledo-Cleveland; Cleveland-Erie; Erie-Buffalo, and Buffalo-Niagara Falls. The remaining routes are Harrisburg-Bedford; Bedford-Pittsburg; Pitsburg-Cleveland, and Pittsburg-Washington and return. The usual style of giving odometer readings in the left margin at each turn and land marks is adhered to and with the book it is possible for an average tourist to make the run over any of the routes without having to stop once to ask for information.

The 1909 catalog of the Chalmers-Detroit Motor Co. illustrates and describes in detail the new Chalmers-Detroit cars showing both sides of the power and transmission plant, the two-bearing crankshaft, unit cylinder casting, as well as the usual selection of chassis and other illustrations. One illustration shows the rubber bushing in the eye of the rear spring which is used to absorb jar. In addition to a final table of specifications are illustrations of the Chalmers-Detroit Forty cars in contests.



PACKARD EIGHTEEN—THE COMPANY'S NEW SMALL CAR IN TWO BODY STYLES

Legal Lights and Side Lights

AGAINST RECKLESS DRIVING

The American Automobile Association has sent a hurried notice to its 20,000 members, scattered throughout the United States, to the effect that very drastic anti-motor legislation is going to be enacted in several of the eastern states, particularly Connecticut and New York, if reckless speeding is not stopped. Secretary G. K. Dustin, of the Automobile Club of Hartford, Conn., says the Connecticut law, which is regarded as one of the model motor vehicle laws of the country, is liable to be repealed, and substituted for a very unwelcome law against motorists unless the association can bring about a hurried reform among the speed maniacs. The association always has stood out against speeding and the attitude of President William H. Hotchkiss and Charles Thaddeus Terry, chairman of the legislative board, has been made public upon many occasions during the past year. Mr. Terry and F. H. Elliott, secretary of the association, attended a hearing before the supervisors of Nassau county, Long Island, who have announced in very plain language that they are determined to send speeders to jail unless the association, and the clubs affiliated with it throughout the country, can bring about a reform by moral suasion. The Long Island Automobile Club was represented at this meeting by F. G. Webb, chairman of the club's committee on public safety; W. P. Richardson, Lewis T. Weiss, Russell A. Field and C. C. Cluff. The Vanderbilt cup commission was represented by Jefferson de Mont Thompson, chairman, and A. R. Pardington. All the representatives of motor bodies present at the hearing were thoroughly in accord with the Nassau county supervisors, who reflect in a large measure the attitude of highway authorities throughout the states. Halstead Scudder, counsel to the board of supervisors who has collected statistics on fatalities caused by motor car speeding on Long Island, divides these into murder, homicide, suicide and assault with intent to kill. He says the motorist who drives on the public highways and pays no attention to other vehicles at crossings is a plain outlaw bent upon murdering some other user of the highway or committing suicide. Mr. Scudder said the board of supervisors has authorized him to notify the representatives of all motor bodies that speeding must stop at once or the most extreme measures permitted, under the laws, will be resorted to. The supervisors have carefully collected the names of the resident speeders of Nassau county and they say, without hesitation they will lodge them in jail regardless of their social position or wealth.

The American Automobile Association fully appreciates that this is the feeling of officials throughout the states, where good roads exist and that something must be done at once in order to save the day against radical legislation. The percentage of motorists who are violating the laws to that extent which irritate the citizen and the highway officials is not more than 10 per cent of the whole body of motorists. The bulk of law-abiding drivers are the ones who will suffer if the legislators are driven to repeal the present laws and pass measures, which will satisfy the demands of their country constituents. It is as Mr. Scudder said: "The country people are simply boiling with indignation and while they recognize that not all of the motorists are to blame they do not see any way of preserving their own lives and the lives of their children and horses, except by putting in jail every motorist who goes at a greater rate of speed than 20 miles an hour, even in the most isolated sections of the country. It is evident also that there is a feeling against the owners of cars who permit their drivers to speed, while they are riding in the machines. It is not unlikely such owners will find in the near future that the police are going to hold them as well as their hired drivers."

The association feels it is the duty of every one of its members to heed this warning, which comes from all parts of the east, and which if allowed to spread will result in the enactment of laws in the different states which will be so radical and violent against the motor car that it will be impossible for the association to ever secure a uniform state motor vehicle measure or a federal bill.

CRY FOR SPEED TRAPS AGAIN

The residents of Wareham, Mass., are somewhat divided on the speed question. A short time ago the motorists of that town organized a club and arranged with the selectmen to cut out the traps there. The club hung up banners after the Middleboro pattern which read:

WELCOME TO WAREHAM.
12 Miles an Hour Limit.
Do Not Throw Us Down and the Authorities
Will Not Throw You Down.
WAREHAM AUTO CLUB.

This has worked well in the town but the limits stretch out and take in a few places that have but half a dozen houses and the people in these places have been kicking, saying the motorists have not stopped speeding. They want the traps to be put in again. Those who have watched the motorists say the majority of them obey the law. It is the men from outside the state that do not, it is said. The club has now posted men to watch the cars and note the numbers of those who speed through the town. The first time they will get a letter requesting them to be more careful. A second offense will be followed up by bringing them before the highway commission to have their licenses revoked instead of taking them to court. It is thought that this will prove a deterrent to the speeders.

OBJECTS TO WORD TRAP

When is a trap not a trap? That is the question some of the Bay State motorists have been asking themselves since they were before Judge George W. Kelley, of Hingham, last Friday. During the course of his argument for the defense the attorney referred to the trap. "What do you mean by trap? There are no traps in Hingham," said the judge. He then went on and said that if the measured courses were meant the counsel should designate them as such and not as traps. This came as very much of a surprise, for hundreds of cases have been tried before Judge Kelley and the word trap has been frequently used in connection with them. Hingham is noted as one of the few towns in the state where the traps are worked at a wholesale rate.

GOOD ROADS LAW INVALID

A blow to scientific road improvement in Minnesota has been administered by the state supreme court, which has declared unconstitutional the law passed in 1907, providing for county superintendents of highways. The law was passed on recommendation of the road experts who were responsible for the establishment of the Minnesota state highway commission, and its beneficial effect was being felt throughout the state. The law is overturned on the ground that it is not general legislation, as it exempts cities of over 200,000 inhabitants. The counties outside of Ramsey and Hennepin, in which St. Paul and Minneapolis are respectively located, will therefore be compelled to return to the old system of road supervision by town and county boards, and road overseers. The legislature will convene this winter, and an attempt will then be made to secure a similar law which will stand the scrutiny of the courts. "The decision of the supreme court is a set-back to the good roads work in Minnesota," said George W. Cooley, state highway engineer, "but I believe it will result in good, in that it will call general attention to the need of more careful legislation on the subject. The people throughout the state are now thoroughly in sympathy with the scheme of concerted action for road improvement and they recognize the need of scientific road supervisors for this sort of work in each county throughout the state of Minnesota."

MAGNALIUM—A CHARACTERISTIC METAL

EDITOR'S NOTE—The accompanying paper was prepared by M. R. Machol, a well known authority on metals.

MAGNALIUM is an aluminum alloy which promises to fulfill the expectations based in the past on aluminum but never wholly realized. Like pure aluminum, it can be cast in a liquid condition. The casting can be machined about the same as brass. The machined surfaces are of a mirror-like smoothness and silvery color, and perfect screw threads can easily be cut in the metal. Bored holes are always very sharp and clean, while filing results in fine, regular, clean-cut surfaces without tearing up the metal or clogging up the file, and it will allow the use of even the finest files.

Magnalium can be cast by any foundryman, the only precaution necessary being the use of clean graphite crucibles, and care must be taken not to increase the temperature too far above the melting point, as this weakens the metal. If cast in an iron chill, the tensile strength is greatly increased and is at a maximum if the chill is water-cold. Cast in dry sand, the usual quality of magnalium has a tensile strength of 18,000 pounds per square inch, and shows reduction of area of 3.75 per cent. Cast in iron chills, 22,000 to 25,000 pounds per square inch may be realized, the reduction of area being 5 to 8 per cent. The tensile strength of a quality containing a somewhat smaller percentage of aluminum equals about 34,000 pounds per square inch, but can be increased to about 42,500 pounds per square inch by proper treatment. By drawing, rolling, pressing, etc., the tensile strength obtained by quick cooling is still further increased. Wire drawn from one quality of alloy has a tensile strength of 41,000 pounds and 10 per cent reduction of area, while it will stand 53,000 pounds if the raw material has been forged before drawing.

High Tensile Strength Possible

Soft rolled sheets of alloy "Z" have a tensile strength of 42,000 pounds and 15 per cent reduction of area; hard rolled sheets about 52,000 pounds and 3 per cent reduction of area. Magnalium containing less than a certain percentage of aluminum cannot be rolled but can readily be drawn. The tensile strength of a drawn bar is 60,000 pounds, and that of a tube 74,000 pounds per square inch. Another advantage of magnalium is that it is extremely close-grained, so the polishing can be done without previous treatment by any special instruments. Furthermore, in lathe work, the tool speed can be twice as high, thus making a great labor saving. Pure aluminum, being soft, can be cut with a knife like zinc or lead, while magnalium is hard. Some magnalium alloys, however, are very ductile and can be forged, rolled, drawn, etc., sharing all the advantages of aluminum in this direction.

Annealed magnalium "Z" is so ductile it can be rolled or beaten like silver. The elasticity of cast or annealed magnalium is small, but in the forged, hard-rolled or drawn material it is much greater. It attains and maintains a high polish and shows excellent resistance to atmospheric conditions. Its color is silvery white and it has the further advantage that its specific gravity is less than that of aluminum. While the specific gravity of pure aluminum is 2.64, magnalium shows 2.4 to 2.57, according to the percentage of alloy.

The metals named below are the following number of times as heavy as magnalium:

Zinc	2.87	Brass	3.61
Tin	2.92	Silver	4.20
Copper	3.58	Lead	4.56
Cast iron	3.38	Gold	7.70
Nickel	3.30		

The melting point is 640 to 676 degrees C., or 1,185 to 1,250 degrees F.

Magnalium does not have any odor and resists oxidation better than any other light metal, being almost unaffected by dry or damp air, water, gaseous ammonia, carbonic acid, sulphurate of hydrogen and most organic acids. It is only very slowly affected by saltpeter or sulphuric acid, and more rapidly by alkalies or strong alkaline solutions. Salt water attacks magnalium slightly, but where exposed to sea water the metal should be lacquered, which will protect it so that it will give excellent satisfaction. It shows almost no magnetic influences but its electri and thermal conductivity is about 58 per cent of that of pure copper. The electric conductivity of the most important metals, taking that of copper as 100, is as follows:

Silver	100.00	Swedish iron wire	16.00
Copper	100.00	Tin	15.45
Gold	78.00	Platinum	10.60
Aluminum	63.20	Lead	8.88
Magnalium	56.10	Nickel	7.79
Zinc	29.90	Antimony	3.88

The specific heat of magnalium is 0.2185.

Melted in Crucibles

Magnalium is best melted in ordinary graphite crucibles, care being taken that the crucibles are perfectly clean. The metal must not be heated further beyond its melting point than necessary, which is about 1,200 degrees Fahrenheit. The crucibles should be evenly surrounded with coke, and should rest on a fireproof support, this being necessary to keep the crucible from direct contact with the grate and to prevent cooling the metal by an air draft after the coke burns up. The lid remains on the crucible to prevent contact between the air and furnace gases and the metal. The temperature should be as even as possible and the crucible should reach a red, but never a white, heat. When the metal is melted, the crucible should be removed from the furnace and placed on a warm iron sheet or other fireproof support to prevent the metal chilling from the bottom before pouring. The molten metal should be well stirred and the slag skimmed off, and then cast into an iron mold in such a way that the slag and oxidized skin can be kept back by a skimmer. No flux is necessary. In spite of its low melting point it should take from 43 to 45 minutes to melt magnalium.

In making sand molds the sand is loosely pressed and should have as many air-holes as possible. The casting channel should be cylindrical, the entrance should be wide and the casting funnels and the risers must be wide at the base and narrow at the top. The casting head should also be rather large. Where molds are prepared in this way the air and gases can easily escape. The oxidized skin and slag will rise and the finished casting is absolutely free of pores or blowholes. For casting in an iron mold the metal must be hotter and the molds should be well heated. When melting scraps, chips, turnings, etc., the larger pieces should be melted first, then the crucible should be removed and the borings, turnings, etc., be added, as otherwise the loss due to burning is too large. When melting large pieces this loss is not more than from ½ to 1 per cent. The loss in melting borings and file dust is as much as 10 to 15 per cent. In damp sand, the metal should be cast quickly and at as low a temperature as possible. In dry sand or chills, the metal should be bright red and should be cast slowly. Ingots must be cast in closed molds with planed inner surfaces. The molds should be well cleaned before using, brushed with graphite and well heated. Castings in sand should be cooled slowly, but chilled castings, especially ingots, should be cooled quickly, preferably in cold, flowing water. This treatment makes the metal very tough and ductile.

How Metal Is Forged and Rolled

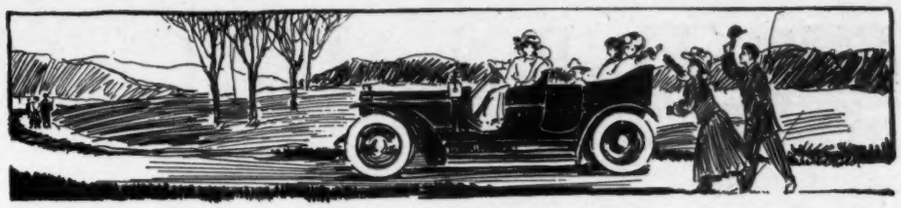
Magnalium, especially alloys "X" and "Y," can be forged with good results most easily by heating the metal and then working about the same as Swedish steel. The metal must not glow red but must be hot enough to char a piece of wood. Of course, the casting has to be clean before forging to avoid cracks. The great ductility of magnalium, especially alloy "Z," makes it possible to produce plates of any thickness. The ingot is first heated to between 570 and 600 degrees Fahrenheit, and rolled so that the reduction at the first pass is about 20 per cent. Then the plate

is again heated. After the first two passes the plate is turned 90 degrees and passed through the finishing rolls until it reaches the required thickness.

As magnalium rapidly loses its ductility in rolling it has to be annealed repeatedly. The rolls must be thoroughly cleaned and sprinkled with paraffin for every pass. If possible, it is advisable to work the ingot with a hammer before rolling. All roughness of the surface of the ingot should be scraped, as is done with copper or brass. A large amount of power is necessary for rolling, about as much as for heated steel. The operation is facilitated if the rolls are heated to a temperature of from 210 to 300 degrees Fahrenheit. Ingots thicker than .15-inch must be annealed after each pass. Below this thickness, plates can be finished by cold rolling. All other manipulations in rolling are about the same as with other metals.

Method and Results of Annealing

Magnalium should be annealed in a muffled furnace in order to keep the flame and gases away from the metal, and the annealing furnace must be kept at an even heat. The metal must appear dark red and char a pine wood stick so that carbon particles separate from it. To anneal plates does not require as high a temperature. If plates are chilled in cold



water, they will be very tough and ductile. The thinner the plates the lower should be the temperature of the annealing furnace. Plates of less than .01-inch thickness can be heated in boiling oil or water, and allowed to slowly cool. If magnalium is gradually heated to a temperature of less than 750 degrees Fahrenheit, and slowly cooled, the metal gets so hard and elastic that it can be worked into springs.

It is a very ductile metal and in this respect is only surpassed by gold, silver, platinum and copper. The diameter of the cast ingot should be reduced very slowly at first, best results being obtained if the ingot is forged before drawing. Perfectly smooth wire as fine as silk threads has been made with astonishing tensile strength. Tubes made from plates or from cast hollow pieces are treated in exactly the same way as rods, namely, annealed repeatedly, chilled and afterward drawn cold over a mandrel.

Where machinery is concerned, magnalium is remarkable, inasmuch as it can be tooled at high speed, about like steel. Screwthreads of considerable length can be easily and cleanly cut. The tools have to be very sharp, and the surfaces—both metal and tools—must be kept lubricated with either kerosene, turpentine, paraffin, benzine, vaseline, soapwater or even clear cold water. Excellent surfaces will result and perfect screwthreads or holes will be obtained. To cut magnalium, a fine-toothed saw, lubricated with kerosene, is recommended. Magnalium can be punched, drop-forged and pressed without any difficulty about the same as silver, brass or steel plate, provided that it has been well annealed.

This new aluminum alloy is a German product and it has met with considerable success abroad in such applications as bicycle, motor car and aeronautical work. It is manufactured by a large German concern, for which the writer is the American representative at 32 Park place, New York.

HOW A PATENT CAN BE SECURED IN AUSTRIA

UNDER the patent law of Austria the author of the invention or his representative has the sole right to a patent. The first applicant is considered as the author of the invention until the contrary is proved. Persons not residing in Austria must appoint a representative residing in that country. The law prescribes that patentable inventions are new inventions susceptible of industrial application. An invention is not considered new if before the date of the filing of the application for a patent it had already been described in a printed publication in Austria in such a manner as to render possible its use by those skilled in the art; or had been used, put on exhibition or presented in the country in a sufficiently public manner as to render possible its use by those skilled in the art. Further, an invention is not considered new if it has been the object of a patent granted in Austria which has subsequently lapsed.

There are four kinds of patents in Austria. The first is patents of invention, the duration of which is 15 years, starting from the date on which the application for a patent was published in the Austrian patent journal. The second is for patents of addition, which have the same duration as the principal patent to which they refer. The third class is for patents of exposition. These are granted under conditions to be determined by an ordinance to the minister of commerce, for insuring temporary protection to patentable inventions figuring at expositions. The duration is from the admission of the object to the exposition until 3 months after the close of the same. Patents of invention that cannot be exploited without entire or partial utilization of another invention already patented are designated by the name of "dependent patents."

The filing fee for patents of invention is $4, while the annual taxes are as follows: First year, $8; second year, $10; third year, $12; fourth year, $16; fifth year, $20; sixth year, $24; seventh year, $32; eighth year, $40; ninth year, $48; tenth year, $56; eleventh year, $72; twelfth year, $88; thirteenth year, $104; fourteenth year, $120; fifteenth year, $136. Patents of addition cost $8 in addition to the filing fee of $4.

In order to secure an Austrian patent the inventor must address application to the patent office. The application must contain, first, the full name of the inventor, and if necessary that of his representative, as well as their professions and residences; second, a request for the grant of a patent; third, the title of the invention; fourth, a statement of the number of years for which the tax is to be paid before the delivery of the patent. With this must be deposited the filing fee of $4, or a certificate showing that this amount has been sent by mail. The power of attorney to the inventor's representative, if necessary, must also be deposited, together with two copies of the description of the invention, signed by the applicant or his representative.

The description of the invention must, first, describe the invention in such a manner that it can be executed; second, group the characteristic elements of the invention in one or more claims; third, include the drawings, in duplicate, on tracing cloth, necessary for understanding the description, and be accompanied, if needed, by the necessary models and samples. The filing of models and samples is obligatory only when necessary for understanding the description of the invention.

The grant is as follows: First, preliminary examination bearing on the patentability of the invention; second, publication of the application, with the call for opposition. The time allowed for opposition is 2 months. In case of the rejection of the application or in case of the allowance of a contested application the interested party may appeal within 1 month to the division of appeals.

Patented inventions must be commercially produced in Austria at the latest within 3 years from the date of publishing the grant in the patent journal, and working must not be discontinued for more than 2 years. The provision is made, however, that the forfeiture of a patent cannot take place unless preceded by an official summons and warning of forfeiture.

EDITOR'S NOTE—This is fifth of a series of articles on obtaining patents by H. G. Ward, Motor Age correspondent, Washington, D. C.

The Realm of the Commercial Car

JULY, August and September are black months for the Parisian cabby, for during this quarter of the year the gay capital is deserted of its rich, pleasure-seeking population and of a large proportion of the wealthier permanent residents. Up to the present taxicab drivers have not felt the influence of the dead season, their numbers not being sufficient to cause a serious falling off in their business while everybody is at the seashore or in the mountains. Now, however, that the taxicab outnumbers the horse vehicle and competition is becoming keener among the drivers of gasoline buggies, there are idle moments. It is just here that the superiority of the motor car over the horse cab shows itself, for while the latter were obliged to pass through 2 or 3 months' slack season by reason of summer vacations, the former follow their customers to the holiday resorts and do good business. The exodus really began with the grand prix, a respectable number of taxicab drivers packing up their baggage and making arrangements to carry a party out to the Dieppe district. Arriving there, the chauffeurs took up temporary headquarters in the belief that a brisk holiday resort possessing only a few horse vehicles of uncertain age was a better place in which to do business than a deserted capital in the month of August. This month there has been a further exodus of taxicab drivers to Trouville, Deauville and other spots around the mouth of Seine river. The nearest seaside resort is Dieppe, 107 miles away; Trouville and Deauville are about 140 miles away, thus even a little two-cylinder taxicab can change its field of operation in half a day and with the expenditure of but 4 or 5 gallons of gasoline.

LOCOMOTIVE TAXICABS IN PHILADELPHIA

In most cases, however, the driver waits until he can find a party willing to ride out to the seashore, a journey which he is willing to undertake for $20 to $40. As the party may number three or four the price is certainly not excessive. From the standpoint of comfort and enjoyment there is no doubt whatever as to which is the better way to travel. Towards the close of the season the taxicab driver endeavors again to meet with some party desirous of returning to Paris by road, and generally has not much difficulty in finding a family willing to wind up its vacation in this manner. With the outward and return journeys thus practically assured, the move is certainly a wise one, for though business may not be quite so regular in the seashore resorts as in the capital during the busy season, it is much better than the Parisian slack season. Not even the most popular of French Newports and Atlantic Cities could hope to maintain a taxicab service exclusively for their ephemeral seasons, the annual arrival, therefore, of the Parisian vehicles is appreciated by all—except, perhaps, the local livery man, who thus sees the passing of the horse in a manner he had never dreamed possible. But since the Parisian milliners, dressmakers, tailors, hairdressers, bakers and cooks follow the fashionable world to the seashore why should not the taxicab driver? It is a change of condition that will doubtless very soon apply to other than French pleasure resorts.

WHITE STEAMERS USED BY BOSTON PUBLIC LIBRARY TO COLLECT AND DELIVER BOOKS

BOSTON SERVICE INSTALLED

The promised taxicab service in Boston has gone into effect, twenty-five machines having been placed in the Motor Mart and sent out in answer to telephone calls. The delay in getting them into commission was caused by procuring licenses for machines and drivers and also arranging a schedule of fares with the police commissioner. The cabs in use are made by Thomas and another order for twenty-five more has been placed by the Boston company operating the system. At first they will respond only to telephone calls but when the next lot arrives a number of them will be placed at different points about the city. The regulations promulgated by the police commissioner are as follows:

Maximum rates of fare for hackney carriages propelled by mechanical motors and using taximeters as a means of measuring the distances traveled, to be known as motor taxicabs, are hereby established and made a part of the rules and regulations for hackney carriages, to remain in force until otherwise ordered.

With the exception hereinafter stated the fare in a motor taxicab for any number of persons up to its capacity carried from any point to any other point within the city limits shall be as follows:

First ½ mile or fraction thereof, 30 cents.
Each ¼ mile thereafter, 10 cents.
Each 6 minutes waiting, 10 cents.

For three or more persons from one point to another point within that part of the city proper lying north or east of Massachusetts avenue the rate shall be as follows:

First ½ mile or fraction thereof, 30 cents.
Each 1-6 of a mile thereafter, 10 cents.
Each 6 minutes waiting, 10 cents.

Waiting time shall include all time during which the vehicle is not in motion, beginning with its arrival at the place to which it has been called, or, if engaged in the street or at a stand, beginning at the time of such engagement; but no charge shall be made for time lost through interruption of street traffic or through the inefficiency of the vehicle or of its driver, or for time between a premature arrival

in response to a call and the hour for which the vehicle was ordered.

No charge shall be made for a distance less than 1 mile traversed by a vehicle sent in response to a call, but for a greater distance a charge of 20 cents a mile may be made for each mile or fraction of a mile in excess of the first mile.

When a vehicle is dismissed at a point more than 2 miles distant from the place at which it was engaged, or from the place at which it was when called, a charge of 20 cents a mile may be made for each mile or fraction of a mile in excess of such 2 miles.

Hand baggage may be carried by pasesngers without charge.

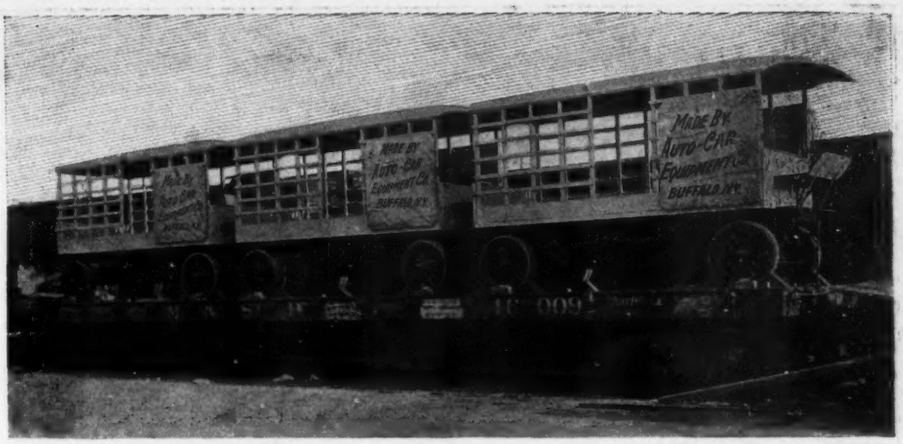
Ferry tolls will be paid by passengers.

IN IVORY SOAP SERVICE

Advised by its head engineer that the modern motor truck is economical and capable of giving long service, the Procter & Gamble Co., maker of Ivory soap at Ivorydale, near Cincinnati, O., recently purchased a Logan model S 3-ton truck and that the experiment is a satisfactory one is shown by a testimonial letter in which the company declares the Logan is giving good satisfaction and getting faster each trip. "We do not expect to again use horses and wagons for our city hauling, as the truck is doing all we expected of it and the prospects are it will do even more," says the company. "It made a 6,000-pound delivery this morning and was gone from the factory 3 hours; ordinarily the teams would require 8 hours."

STEAMERS AS LIBRARIANS

The White company in Boston in a keen competition secured the contract to do the work of distributing and collecting the books for the big public library in that city. The Boston public library is one of the largest in the world, and it has a great many branches where the readers always find books as readily as at the big building. To distribute and collect the volumes is a big task, involving a trip of something like 60 miles a day for each of the three White steamers used in the work. The cars do the work of five horses and wagons formerly employed. Not alone that, but the service is better, for the motor cars do every day what was done but three times a week under the former conditions. The contract is a most exacting one, but since the service began May 11 everything has been carried out admirably and there has never been a delay recorded. Each car makes thirteen regular stops and sometimes several additional ones.



COAST SHIPMENT SENT BY AUTO-CAR EQUIPMENT CO. OF BUFFALO

HOOSIERS LIKE THE MOTOR

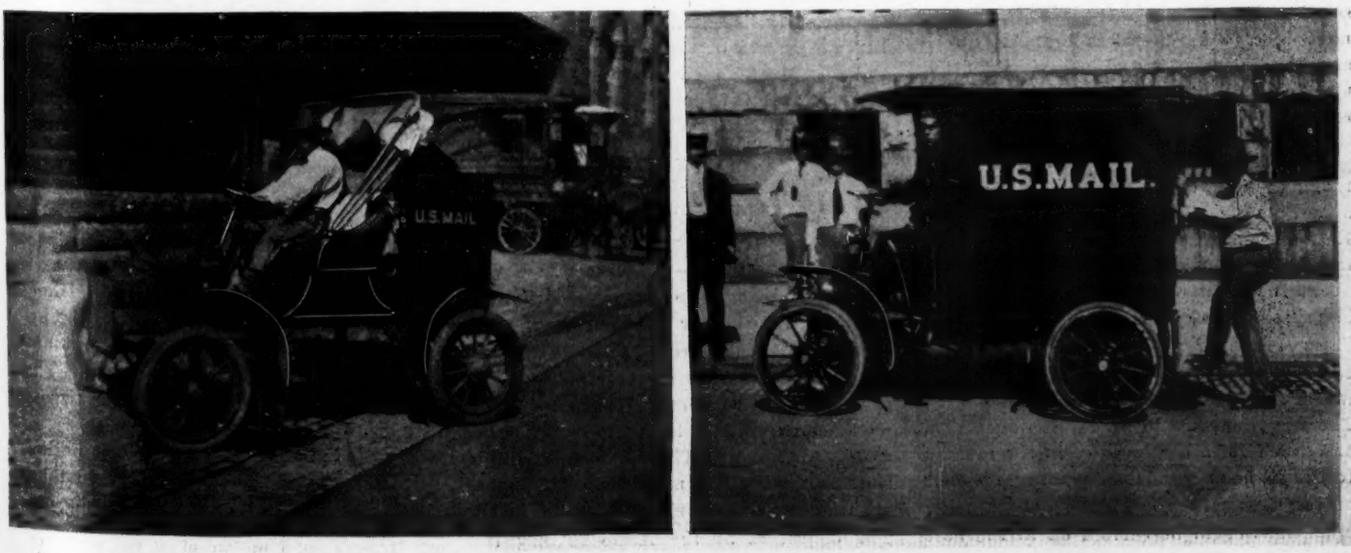
Statistics furnished by the Kramer-Allen Motor Co., of Attica, Ind., shows the service which is being obtained by the Indiana Springs Co. with three commercial cars between Mudlavia and Attica, the latter a railroad station. The economy of the motor service is illustrated by the statement that formerly the cost of horse livery service for this work was about $500 a month; with the three motor buses the work is done for $250 a month, which includes oil, gasoline and drivers' salaries. The table accompanying this statement shows that No. 1 bus made forty-six trips in 17 days; No. 2 twenty-seven trips in 90 days, and No. 3 twenty-nine trips in 60 days—really consistent work.

BRUSH-CADILLAC SERVICE

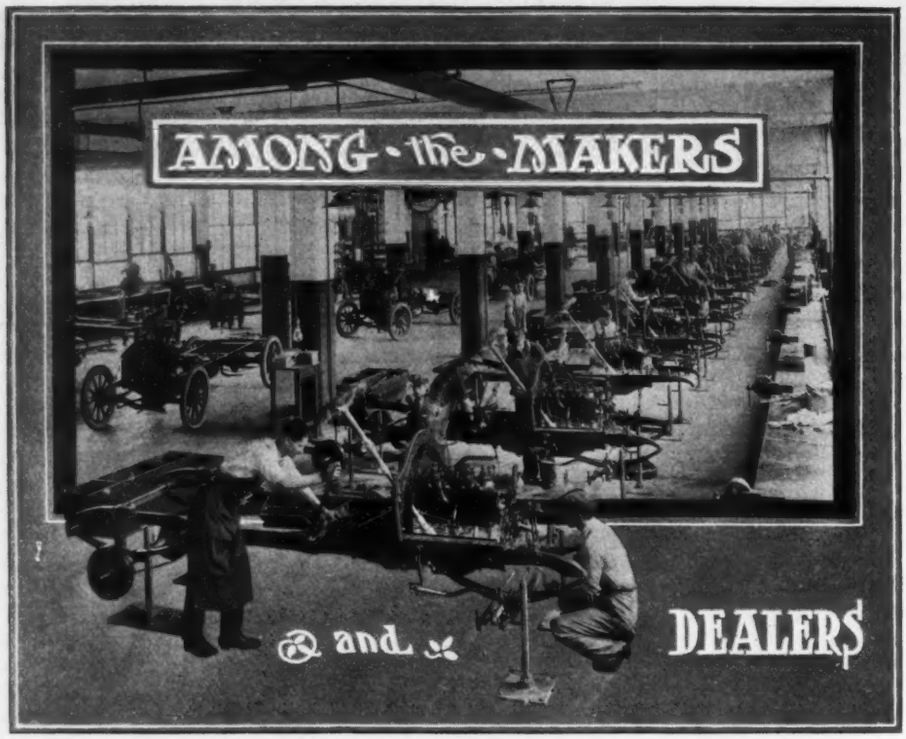
The postal authorities of Washington, D. C., have entered into a year's contract with the Brush-Nichols Co., agent for the Brush, for four Brush delivery wagons to be used in collecting the city mails. These were supplemented August 15 by two single-cylinder Cadillacs, provided and operated by letter carriers, an allowance for the same having been made recently. With these six cars in use eight men and twelve horses are saved in the city mail collection service. The Brush cars are of the single-cylinder type and are rated at 6 horsepower. Three of them will be in constant service while one will be held in reserve for emergencies. Two shifts of men will be employed to operate them and every effort will be made to demonstrate the practical utility of the motor car in facilitating the collection of mail, not only from the outlying districts, but in the crowded city streets.

CAB SERVICE IN PHILADELPHIA

Motor cabs were formally introduced for service at the hotels and railroad stations of Philadelphia, when President Claude S. Jarvis, of the Quaker City Cab Co., had Mayor Reyburn and two score other prominent persons as guests on a short run for a luncheon at a famous hostelry. The cabs, which are of the Locomotive make, have dark yellow running gears and dark brown bodies. Most of the cabs on the day of the celebration were well tested by carrying six passengers over rough roads, but there was no mishap.



CADILLAC AND BRUSH WHICH ARE BEING TESTED IN POSTAL SERVICE IN WASHINGTON, D. C.



FINAL ASSEMBLING ROOM IN THE CHALMERS-DETROIT FACTORY

Offer a Settlement—Officials of the defunct Earl Motor Car Co., of Kenosha, Wis., have decided to offer a settlement to creditors on the basis of 15 cents on the dollar.

King in Milwaukee—The King Leather Tire Co., formerly at Racine, Wis., is now permanently located in Milwaukee, where the King company's make of tire will be manufactured in extensive quantities. The factory is located at 369 East Water street. John O. King, inventor of the tire, is superintending the factory.

Snow Needs More Room—Manager John L. Snow, of the Boston branch of the Peerless company, has been forced to enlarge his quarters to take care of the big business he is doing. When the Diamond Rubber Co. moved it gave him the chance he sought, for the vacant place was right next door to the Peerless branch. So he secured a lease of it and is having it fitted up. This will give him just twice as much room as formerly.

Chalmers-Detroit Plant Busy—These are rushing days at the factory of the Chalmers-Detroit Motor Co., in Detroit for 1909 production is going forward at a rapid rate. Deliveries of 1909 cars began about the middle of July and cars are being shipped every day. Up to August 11 Sales Manager Counselman had closed contracts for 2802 of the 1909 cars, of which about 80 per cent were for the 30. The large increase in production over 1908 has called for a big increase in the factory force and has necessitated a rearrangement of departments so that manufacturing operations could be carried on to the best advantage. The final assembling room, a picture of which is shown, is 200 feet long and has facilities for setting up fifty cars at a time.

Handling Panhard Oil—The G. A. Haws Co., manufacturer of Panhard oil, announces the appointment of the Beckley-Ralston Co., 80 Michigan avenue, Chicago, as Chicago distributor for its oil.

Bristol Company Opens—The newly-formed Bristol Engineering Co., of Bristol, Conn., has opened up for business with a small force of men, which will be augmented as business may demand. The company has been capitalized at $500,000, the certificate of incorporation having been filed with the secretary of state. The concern will manufacture taxicabs.

Named After Daughters—The stork was responsible for the naming of the newly-organized Ruth Automobile Co. at Warsaw, Ind. Members of the company are Henry Outcelt, Mack Mock and Milo S. Daniels and within a few days each was presented with a daughter. Without the knowledge of the various parents, each daughter was named Ruth, and upon comparing notes the fathers decided that would be an appropriate name for their company.

New Acme Racer—One of the first Vanderbilt cup cars to be made ready for the big race in October over the new Long Island motor parkway is the Acme six. The car is a development from the Acme sextuplet. The motor is a six-cylinder with a bore slightly less than 5 inches and a 5-inch stroke. The wheelbase will be short, probably not more than 116 inches, with front and rear tires 36 by 4½ inches. The engineers at the Acme factory rate the engine at 60 horsepower and it has been tested up to nearly 2,000 revolutions per minute. The cylinders are cast single and the valves are on opposite sides.

New Place in Racine—The new garage in Racine, Wis., being erected by the Electrical Constructin Co., is about completed and will be opened next week. It is located at Fifth street and College avenue.

Pope Business Good—Things are running along smoothly at the Pope Mfg. Co.'s plant in Hartford and orders for cars are being filled as rapidly as possible. Business continues to be good. From a statement just filed with the court it appears that about $84,000 of business was done during the month of July. The cash receipts for the month were $121,000.

Fanning a Hoosier—Frank J. Fanning, recently appointed Indiana agent for the Chalmers-Detroit, is opening up headquarters in Indiana and has already taken an active part in the affairs of the Indianapolis Automobile Trade Association. He has leased the first and second floors of the building at 415-419 Massachusetts avenue, recently vacated by the Buick-Losey Co. The Capital Auto Co. will continue to occupy the third floor with a top factory.

Assistant to Trolley—An enterprising Collinsville, Conn., man is about to inaugurate a motor bus line to connect with the Unionville trolley and has purchased a Knox motor truck for the purpose. Six trips are to be made daily and the fare is to be 20 cents each way. This will be a great accommodation to Collinsville people whose only mart is Hartford. There is no trolley connection nearer than Unionville. It will be possible to seat twenty passengers and, if necessary, more can be carried. The initial trip is to be made August 22.

Increases Capital Stock—The Warner Gear Co., of Muncie, Ind., has filed incorporation papers, the articles showing a paid-up capital stock of $500,000, with the following officers: President, A. L. Johnson; vice-president, Hugh L. Warner; treasurer, Ray P. Johnson; secretary and general manager, Thomas W. Warner. W. E. Hitchcock and Thomas Morgan also are on the board of directors. The company now has 250 men on its pay roll and has a plant capable of handling a big output of differential gears, steering gears, transmission gears and clutches.

Pope Rumors—Rumors of all kinds are afloat in regard to the sale of the plants of the Pope Motor Car Co. in Toledo and Indianapolis. It has been stated that the Indianapolis plant has been sold, although no statement has been made as to the price paid or the purchasers and the rumor of the sale has not been confirmed. There has been a deal brewing for some time for the Toledo plant, a bid of $500,000 having been made for the factory. It is believed that if the Indianapolis plant has been sold and the deal for the Toledo outfit should be accepted that the company would be able to pay creditors 100 cents

on the dollar, provided that the claim of $800,000 made against the Pope Motor Car Co., by the Pope Mfg. Co., is reasonably reduced.

New Bus Line—A motor bus line has been put in operation between Magnetic Springs and Marysville, O. Cars with accommodations for thirty-two passengers have been installed and direct connection is now made with the interurban line between Marion and Columbus.

Start an Exchange—The Wisconsin Automobile Exchange has been incorporated by Milwaukee men with a capital stock of $10,000. L. Deetjen is president, A. F. Eckstein vice-president and T. Deetjen secretary and treasurer. All have been connected with big manufacturing concerns in Wisconsin. Temporary quarters are at 42 Sentinel building, Milwaukee.

Ford's New Factory—The work of the new Ford factory at Highland Park, Detroit, has been started and the contract calls for completion of the plant by January 1. The old orchard and shade trees that have stood for ages on the Woodward avenue side of the land are being cut down. The old farm house, one of the land marks of North Woodward, is being razed and the ground has been broken. The main building of the new factory will be the largest building under one roof in the state of Michigan.

Franklin's Trade Mark Upheld—The lengthy litigation of the H. H. Franklin Mfg. Co. with Vander Wielen & Schwiebbe, of Belgium, in the matter of cancellation of trade mark "Franklin" registered in that country to cover motor cars, etc., has been terminated successfully by judgment of the court and agreement on the part of Vander Wielen & Schwiebbe allowing the Franklin company's registration to stand so far as motor cars and parts are concerned, Vander Wielen & Schwiebbe retaining the registration covering bicycles, bicycle parts, etc.

More Garden Plans—At the meeting of the A. L. A. M. show committee final plans for the decoration scheme in the garden was approved and the contract for the decorative work awarded. The color scheme and general theme of the decoration for the forthcoming show will be entirely different from those of previous years. Simplicity has been the keynote of the general decorative scheme, having in mind that the decorations were to be such as to give the motor cars a suitable background or setting. Although simplicity has been established, the high standard set by the show committee in the decoration of the garden will be maintained and a more effective presentation of the cars will result. The architectural plans of the garden are entirely different, the elevated platforms and temporary structural work being a great improvement over those of former exhibitions. Five thousand feet of additional floor space has been gained by this new arrangement, which will be of decided advantage to the Motor and Accessories Incorporated as well as to the motor car exhibitors.

Again Working Nights—The night force of the W. H. Kiblinger Co., which was temporarily laid off some few weeks ago has resumed work. The Kiblinger motor plant has been in operation 23 hours in the day almost continuously since February 1.

Mitchell Will Entertain—The Mitchell Motor Car Co., of Racine, Wis., will entertain at the home office on August 27, 28 and 29, upward of 100 of its general salesmen from all over the western hemisphere. There will be a luncheon and a dinner and a theater party the first day, business will be discussed the second day and the third day will be devoted to business and entertainment.

May Go to Coast—A. E. Morrison, one of the best known dealers in Boston, is seriously considering a proposition to go to California and go into business. He is a member of the firm of Morrison & Price in Boston and he will probably retire from business there. He was in California years ago and he has always had a liking for that place, so it will be no surprise if he leaves the Hub.

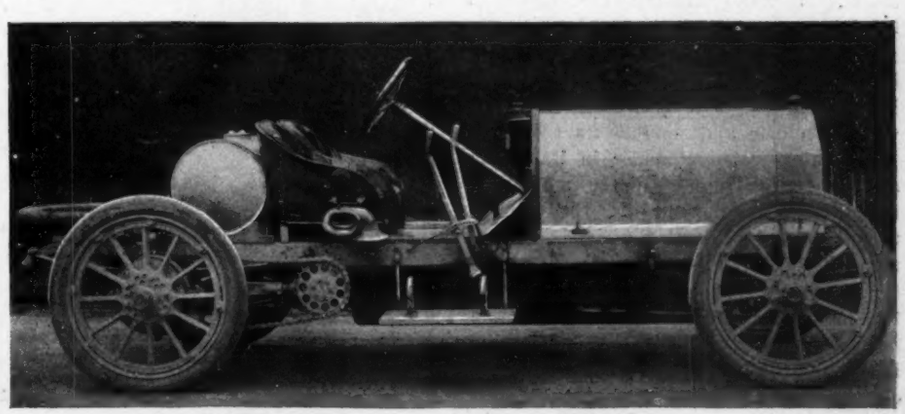
New Franklin Offices—Plans for new offices have been accepted by the H. H. Franklin Mfg. Co. and work is now being carried on. The plans call for the entire first and a part of the second floor of the Franklin company's new building at the corner of Geddes and West Marcellus in addition to the space already occupied, making in all 16,000 square feet devoted to its offices. With the great increase in the Franklin company's business, need of additional office space for the 150 employes has been evident for a long time. The offices when finished will be ideal in their arrangement, much thought having been given to the question of heating, ventilating and lighting, experts in each of these lines being employed in preparing the plans. The arrangement of the office is to be such that each department manager has a private office with office for his working force directly adjoining. A women's rest room, equipped in an up-to-date manner, has been provided, also a library and directors' rooms. Offices for the newly created departments of commercial car sales and foreign business are embodied in the plans.

Booming Motor Buggies—Sales Manager Allan Miller, of the Reliable Dayton Motor Car Co., is making a 3 weeks' trip to northern Illinois and Iowa in a Reliable Dayton type F, taking in the Iowa state rair at Des Moines.

Fisher Company Moves—Practically on schedule time, the Fisher Automobile Co. moved into its new quarters on North Capitol avenue in Indianapolis last week. It has one of the largest garage buildings in the west and it is equipped with all modern conveniences. The building is a three-story concrete structure. The offices and sales rooms will be on the first floor with the repair shop, sundries department and paint shop on the upper floors. The company will continue to handle the Stoddard-Dayton, National, Maxwell and Mitchell in Indiana.

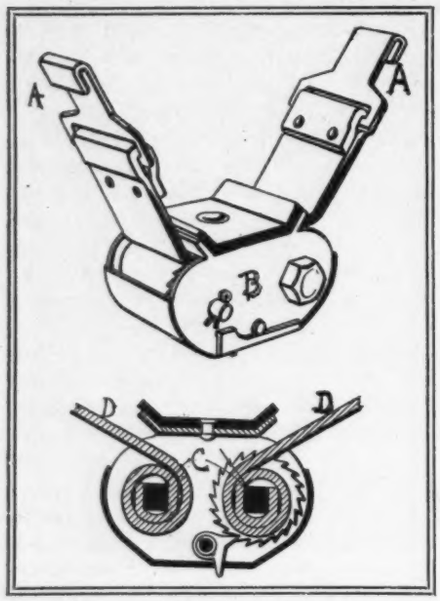
Columbia Report—The report of the receivers of the Electric Vehicle Co., Halsey M. Barrett and Henry W. Nuckols, has just been filed with the superior court and shows charges on account and cash sales of $33,803.76, and purchases of $5,985.43. The cash statement shows $390,166.46, disbursements of $147,396.23, of which payment of $11,776.68 is made to G. B. Selden. This payment to G. B. Selden may be accounted for by the fact that those concerns back in royalties are said to have recently liquidated. The cash balance on August 1 was $242,770.23.

Gets Packard Agency—The Willis-Haywood Holcomb Co., recently organized, has leased the building just vacated by the Fisher Auto Co. at 330 North Illinois street, Indianapolis, and after September 1 will have the Packard agency in that city. Members of the new company are Frank B. Willis and Miner E. Haywood, for many years with the Fisher Auto Co., and J. Irving Holcomb and Raymond A. Holcomb. The new company, besides handling the Packard, will conduct a large repair shop and carry a large line of sundries. The building is now being remodeled and greatly improved.



NEW ACME RACER WHICH IS ENTERED IN THE VANDERBILT CUP RACE

Development Briefs



UNIVERSAL PROTECTOR FASTENER

UNIVERSAL TIRE PROTECTOR

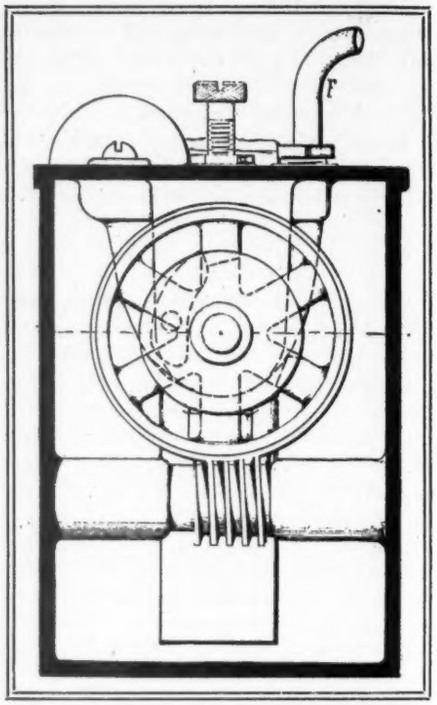
The Universal Tire Protector Co., Angola, Ind., manufactures the universal protector sleeve, which is a non-skid covering inclosing practically one-sixth of the entire casing and which is capable it is claimed of being secured to a tire in ½ minute and removed in 10 seconds. This protector sleeve incloses the tire, and is attached by two universal anchoring devices, which are illustrated herewith. Each anchoring device has a hook A for attachment to the tire sleeve. The body part B of the device rests inside of the felloe of the wheel and contains shafts C around which the ribbons D, carrying the hooks A, already referred to, wind. By the application of a wrench it is possible to tighten these ribbons by the revolving shaft C, thus bringing the protector tight upon the tire.

CHURCHILL LUBRICATOR

The Baker-Churchill-Lee Co., Detroit, Mich., is manufacturing the Churchill lubricator, four illustrations of which are given on these pages and which lubricator has the claims advanced for it that it is built without a spring, without a valve, without a cam and without an eccentric. The lubricator is automatic in its action and is gear-driven from the motor. It is built with any number of feeds from one to sixteen and has on top of it sight feeds through which the oil passing to each bearing must pass. The oiler has two mechanical pumps, one which takes the oil from the reservoir of the lubricators and forcing it through the lead C to the sight feed under the curved glass D. The other pump B takes the oil from the sight feed through the lead E and forces it through the lead F at the other side of the oiler to the bearings. In the section of the oiler the pump B is shown with eight holes H showing it is a four-feed oiler. The oiler pump is driven from a horizontal worm shaft M which drives a gear N on the end of the pump shaft. The usual adjustments for the flow of oil through each of the several feeds is used. The oil is pumped by pistons or plungers which are worked without packing of any nature and in operation one-half of the stroke of the angle drive act as pistons and in the other half as plungers. The regulation is so obtained that the adjustable parts do not move.

SPRING REBOUND STRAPS

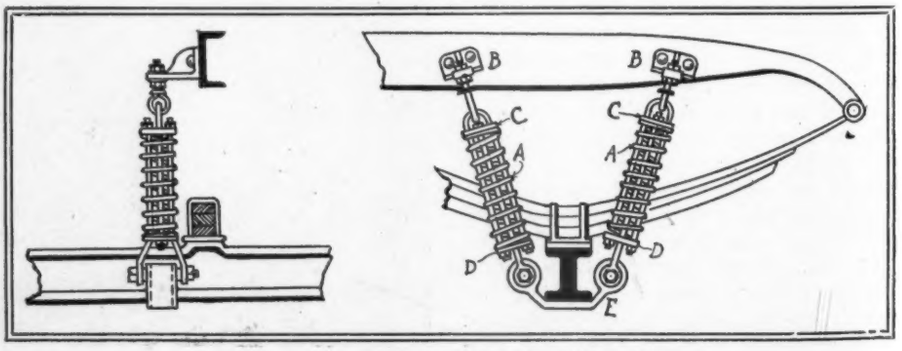
The Spring Strap Co., 3 East Huron street, Chicago, Ill., manufactures a rebound strap intended to be used on motor cars to prevent a rebound of the springs after the car has dropped into a hole or hit an obstruction on the road. It is manufactured to take the place of the ordinary leather strap so frequently used on cars for this purpose and attaches around the side member of the frame and under the axle. As the illustration shows the rebound strap is a combination spring and leather affair, a leather part E passing beneath the axle and the two spiral springs A carried between end plates C and D; the plate C attached by center rod to the leather E and the plate D secured by rod attachment to the bracket B on the frame so that whenever a rebound starts it is absorbed by the springs A and the car is freed from the otherwise sudden jerk it would receive if a non-elastic leather strap were used. The principle involved is a draw bar pull scheme, the rebound tending to compress the springs A. On different weights of cars different strengths of springs may be used. At present leather has been found sufficient for the piece E passing beneath the axle but the company is experimenting with forgings to take its place in fast heavy-weight machines. The straps are manufactured for use on front or rear springs and their attachment calls for securing brackets to the frame as shown at B in the illustration. The coupling between these brackets and the strap is such as to give a free and universal action to the strap, which is not hampered by side sway of the car frame.



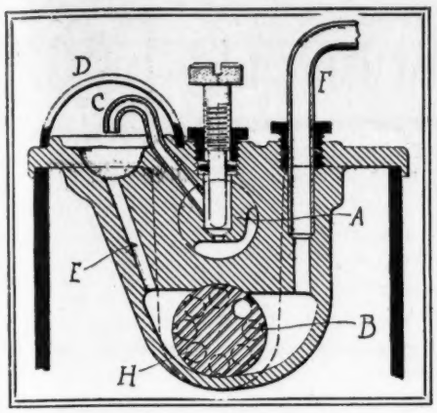
END SECTION CHURCHILL OILER

NEW CARBON REMOVER

The Prest-O-Lite Co., Indianapolis, Ind., has brought out the Prest-O-Carbon remover. The purpose of the preparation is to remove carbon from cylinder heads, pistons, valves and other parts, without the usual labor of tearing down the engine and scraping with a tool. The maker claims for Presto-O-Carbon remover that a single treatment, applied in the motor according to directions will remove every particle of carbon. The compression space of a cylinder is to be filled with the carbon remover, which is allowed to stand 30 min-



SPRING REBOUND STRAP FOR USE ON MOTOR CARS



PUMP SECTION OF CHURCHILL OILER

utes and is then removed. The motor is then run with the spark retarded and the throttle wide open, and the carbon which has been dissolved and loosened is blown through the exhaust. Prest-O-Carbon remover does not, it is claimed, contain kerosene, but is a new combination of chemicals. Its action is confined to the carbon deposits and has no claimed effect on the metals in the engine. It is applied in the cylinder with an oil gun, and removed in the same manner, and may be used several times before it loses its strength. It is put up in gallon, half-gallon and quart cans. Another device has just been brought out by this company. Heretofore, in exchanging an empty gas tank for a full one, it has been necessary to use a wrench in loosening the bands by which the tank is fastened to the car. A new band just put on the market is fastened with a hinged thumb-screw, so that the tank may be clamped on or taken off in a fraction of the time formerly required. This new band can be had of any dealer handling the Prest-O-Lite goods.

THE KEMPSHALL TIRE

Not a little flurry was occasioned in tire circles in England more than 1 year ago when Eleazer Kempshall brought out a pneumatic tire case which due to its peculiar tread construction was considered proof against skidding and was also a forward step in the securing of a tire of sufficient resiliency to warrant its use on fast motor cars. The Kempshall tire is a rubber one with the tread filled with round turret-like projections in the head of each of which is a small pit or cavity. Mr. Kempshall in studying the tread situation of solid tires decided that the circle was the best shape to resist skidding or slipping and adopted it in preference to the transverse grooves and ridges that have had such a vogue in tires. Between each of the seven layers of fabric in the tire is a layer of rubber, the process of uniting these into one mass being one of the patents held by the inventor. Because of this process of construction coupled with the peculiar tread the life of the tire is claimed by the inventor to be doubled. In a test Kempshall tires fitted to a 40-horsepower Fiat car ran 8,000 miles and at the end of that time were in good condition. Another set fitted to a light car after having traveled 6,000 miles were passed upon as being nearly as good as new. These tires are being imported from the parent firm Kempshall Tire Co., 1 Trafalgar building, Charing Cross, London, Eng., by Cryder & Co., New York city.

MORGAN AND WRIGHT SIZES

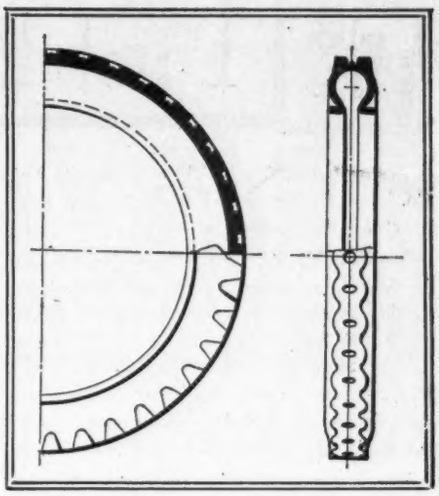
Morgan & Wright, tire makers, Detroit, Mich, realizing that all motorists are aware that large size tires give the best results in comfort and length of service, but that a great many motorists are kept from using them because of the fact that it would necessitate changing to larger wheels, have made this change unnecessary by putting on the market a 31 by 4-inch universal Dunlop tire, which fits a 30 by 3½-inch 1908 Midgeley rim. They also have marketed a 33 by 4-inch Dunlop tire which fits a 32 by 3½-inch Midgeley rim.

BURROWS NUMBER PLATE HANGER

E. T. Burrowes & Co., Portland, Me., manufactures a hanger for a number plate or license tags for motor cars, by means of which the tag can be attached to the steering rod, axle, or any convenient part of the car. Its important feature is a screw clamp which draws the strap so tight that slipping cannot occur. Rattling is prevented by means of a continuation of the strap which forms a leather lining for the supporting hook, which hook is made of steel and is claimed to absolutely prevent loss of the tag.

ANOTHER FRENCH TEST

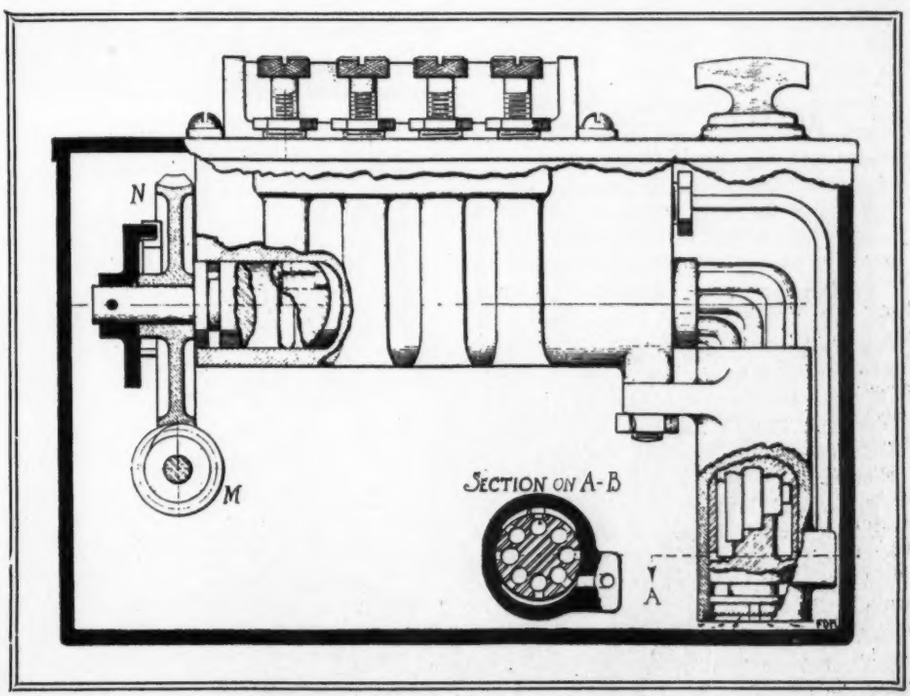
France is to have another commercial vehicle competition this year, the special type of motor cars provided for in the recently announced contest being light delivery wagons, taxicabs and hotel and railroad omnibuses. The competition was originally announced early in the year by two Parisian journals, but on the request of the Automobile Club of France, which had its own trials in view, was indefinitely postponed. The date has now been fixed for the month of October, the exact date and conditions to be announced later.



THE KEMPSHALL TIRE TREAD

TAXED ON GREATEST POWER

The French government has decided that hereafter when considering the horsepower of a car for taxing purpose the highest power will be taken into consideration. For instance, if an owner declare his car has a 15-20-horsepower engine, the government will apply to it the tax levied on a 20-horsepower car. This will mean more money to be paid the government by the owner who until now has most always been able to get his tax record based upon the lowest horsepower.



SIDE ELEVATION OF THE CHURCHILL MECHANICAL LUBRICATOR

Brief Business Announcements

Jersey City, N. J.—The Crescent Auto Co. has been appointed agent for the Pope-Hartford in north Jersey.

Buffalo, N. Y.—William A. Heacock, of Lockport, has bought the Standard garage on Main street, and has appointed Orville Tate manager.

Cleveland, O.—Hall Brothers, who have the agency for the Cartercar in this city, are enlarging and improving their salesrooms at 1613 Euclid avenue.

Minneapolis, Minn.—The local branch of the Winton company expects to soon be able to move into its new building on Eighth street, North, near Hennepin avenue.

Saginaw, Mich.—The Jackson, Church & Wilcox Co., which is engaged in the manufacture of motor car parts, has decided to erect an addition to its factory, which will double the capacity of the plant.

Chicago—C. A. Coey & Co.'s garage at 1710-1718 Indiana avenue was burned out on August 12, and more than fifty renting cars and taxicabs were destroyed. The total loss was estimated at more than $500,000.

Mexico City, Mex.—The new garage for the Buick company, on Avenue des Armes, is progressing rapidly, and will soon be ready for occupancy. The repair shop will not be located in the garage proper but will be situated on the corner of Nuevo Mexico and Humboldt street.

Council Bluffs, Ia.—Plans are under way for the establishment of a bus line between this city and the Iowa School for the Deaf. A car will be run between Pearl street and Broadway and the institution, and later on other lines will be started. It is planned to make a trip every hour.

Sharon, Pa.—The Briggs-Seabury Ordinance Corporation has just awarded a contract to William B. Scaiffe & Sons Co., of Pittsburg, for the erection of a $50,000 building at its local works, the new structure to be devoted to the manufacture of motor car parts and pressed steel shapes.

Brooklyn, N. Y.—The Bruns Automobile Co., of 31-33 Grant square, has just closed a deal with the Carl H. Page Co., of New York city, for the exclusive agency of the Chalmers-Detroit car in this borough. The Bruns company has previously been identified with the sale of the Thomas.

Springfield, Mass.—The Atlas Motor Car Co. has just let a contract to J. G. Roy & Co. for the erection of a new building. The new addition is to be 150 by 50 feet, and three stories in height, and is to be completed by October 1. As soon as it is completed the Atlas Motor Car Co. will begin the manufacture of motor trucks and commercial vehicles on a larger scale than previously. Considerable additional machinery is to be installed.

Topeka, Kan.—The Auto Carriage Co., of Independence, has been incorporated with a capital stock of $15,000.

Jersey City, N. J.—The Tremont Auto Co. has added another car to its list, and in the future will represent the Peerless in Hudson county.

Detroit, Mich.—The Ford Motor Car Co. has just been awarded a contract for 1,000 tons of structural steel for the erection of its new factory building.

Salt Lake City, Utah—The Ogden Canyon Auto Co. has been incorporated with a capital stock of $35,000, and will operate a general transportation business in Ogden canyon.

Pittsburg, Pa.—G. B. Richards and C. A. Vetter have formed a partnership, and will look after the interests of the Acme in this city. They have established their headquarters at 5986 Center avenue, East End.

Utica, N. Y.—The Utica Motor Co. has extended its field by purchasing the business and good will of the Genessee Automobile Co., of Syracuse. The latter concern has a garage on West Genessee street, Syracuse, and is the representative of the Pope-Hartford, the Peerless and the Cadillac, while the Utica company is the agent for the Peerless, Cadillac, Stevens-Duryea and Thomas. The directors of the companies include F. P. Miller, E. J. Otis, G. H. Norris, T. H. Ferris and A. B. Maynard.

Chicago—Standard Automobile Supply Co., capital stock $10,000, to manufacture motor cars and accessories. Incorporators, W. F. McCarthy, G. B. Levy.

Chicago—Crescent Motor Car Co., capital stock $100,000, to manufacture motor cars.

Chicago—Cross Tread Anti-Skid Co., capital stock $5,000, to engage in the manufacture of motor car accessories.

Buffalo, N. Y.—Chief Motor Co., capital stock $250,000, to manufacture and deal in vehicles and boats.

New York—Evelastic Co. of America, capital stock $10,000, to manufacture and deal in pneumatic tires, etc. Incorporators, E. C. and Gustave Siezel, both of New York city.

New York—Knickerbocker Tire and Repair Co., capital stock $10,000, to engage in the manufacture of motor car and other tires.

Newark, N. J.—Empire Tire and Supply Co., capital stock $100,000, to manufacture motors, cars, appliances, supplies, tires, etc.

Muncie, Ind.—Warner Gear Co., capital stock $500,000, to manufacture, buy and sell motor cars. Incorporators, T. W. Warner, H. L. Warner and A. L. Johnson.

New York—George H. Tyrrell Co., of the Bronx, capital stock $50,000, to maintain a garage, manufacture motors, engines, deal in cars, carriages, boats, etc.

New York—Carl H. Page Co., capital stock $50,000, to manufacture spark plugs, motors, engines, etc. Incorporators, C. H. Page, R. R. Montgomery and H. B. Leary.

Columbus, O.—The Cleveland Auto Boat Mfg. Co., of Cleveland, has been incorporated with a capital stock of $50,000.

Harrisburg, Pa.—The Automobile Sales Corporation has been incorporated with a capital stock of $20,000, and will deal in motor cars.

Baltimore, Md.—The Foss-Hughes Motor Car Co., which has the agency for the Pierce-Arrow in Philadelphia, is preparing to open a branch in this city.

Albany, N. Y.—The Co-Operative Garage Co., of New York City, has been incorporated with a capital stock of $10,000, and will operate a garage, deal in motor cars and supplies, etc.

Harrisburg, Pa.—The Lemoyne Bicycle and Auto Co., of Lemoyne, which makes a specialty of repairing and rebuilding motor cars, has announced that it will enlarge its machine shops, owing to press of business.

Trenton, N. J.—The McKeen Motor Car Co., of Jersey City, has been incorporated with a capital stock of $1,000,000, and will manufacture motor cars and engines. The Empire Tire Supply Co., of Newark, has been incorporated with a capital stock of $100,000.

Houston, Tex.—The directors of the Southern Motor Car Co. held their annual meeting last week and elected the following officers for the coming year: President, M. E. Foster; vice-president and manager, E. M. Pavey; secretary and treasurer, E. B. Parsons; superintendent, George E. Ayres.

Pittsburg, Pa.—C. L. Sullivan, who has been foreman of the paint shop in the East End garage of Banker Brothers, has gone into business for himself. His location, however, will not be changed, as he has leased the paint shop from Banker Brothers, and in the future will run that business on his own responsibility.

Kansas City, Mo.—Ground has been broken for a new garage for the Studebaker company, to be located on Grand avenue, near Seventeenth street. Until the new building is completed, the company will have its headquarters in the former quarters of the Auto Motor company, at 132-24 West Fifteenth street.

Pittsburg, Pa.—The Iron City Tire and Repair Co., which for some time has had a repair business on the second floor of the garage of the State Automobile Co., is to remove to the garage of Banker Brothers. This move is for the purpose of uniting their business, as they already have a supply and accessory business in the latter garage.